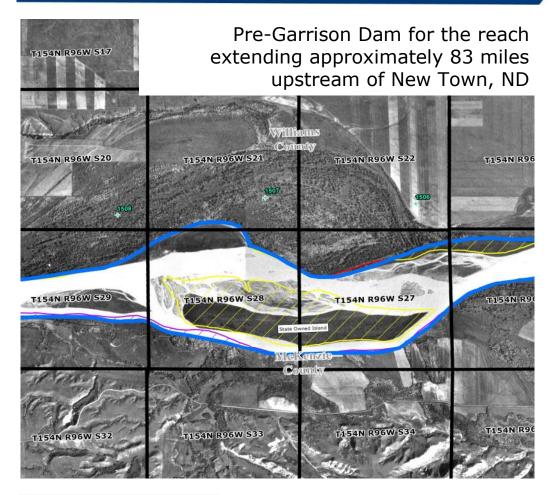
# Ordinary High Water Mark of the Missouri River Bed





# Prepared for:

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Exceptional outcomes.



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This technical report presents the results of an ordinary high water mark (OHWM) analysis of the historic Missouri River channel under what is now Lake Sakakawea. The analysis was initiated by State legislation for the purpose of reviewing the delineation of state-owned lands below the OHWM. The presumptive determination of the OHWM is the property boundary along the river established by the United States Army Corps of Engineers (USACE) before construction of the Garrison Dam. The North Dakota Industrial Commission Department of Mineral Resources (DMR) is identified as the state agency responsible for the work. The study area is the river reach that extends approximately 83 river miles from New Town to several miles upstream of Williston.

The OHWM definition for this analysis is based on State case law. In brief, it is the point at which the presence of action of the water is so continuous as to destroy the value of the land for agricultural purposes, including hay lands. Additional details are provided in Section 2.

The primary data sources in this analysis include:

- Historic aerial photographs taken before the USACE completed earthwork for the Garrison Dam in 1954.
- Pre-dam property or tract boundaries by the USACE.
- USACE property appraisal documents used to purchase easements prior to the construction of the dam.
- USACE pre-dam Missouri River cross sections.
- United States Geological Survey (USGS) 1943 topographic maps.
- USGS flow records from the gage at Williston.
- Case law research.

The following method is used to estimate the OHWM for the study reach. The OHWM is caused by flood flows that occur relatively frequently, approximately every two years and destroy the value of land for agricultural purposes. It follows the water level and is higher upstream than it is downstream. This variation in elevation along the study reach is first estimated using a hydraulic model with pre-dam river cross sections and Williston flow records. A flood flow that occurs every two years is estimated from pre-dam flow records and is used with a hydraulic model to estimate the flood flow levels for the entire 83-mile study reach.

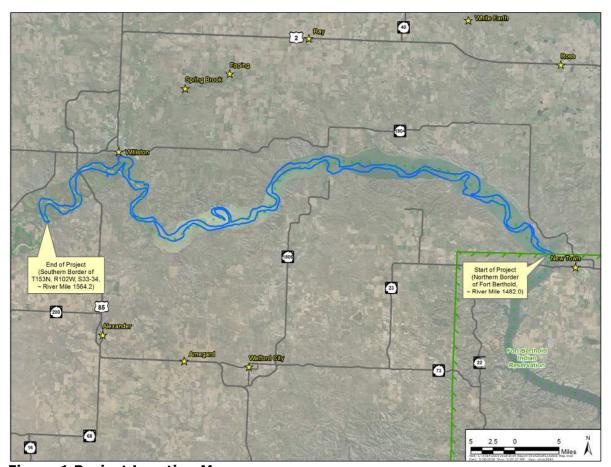
The modeled flood levels are combined with the 1943 topographic maps to estimate the flooded area. This flooded area is used with evidence contained in historic aerial photographs to determine the "line below which the action of water is frequent enough either to prevent the growth of vegetation or to restrict its growth to predominantly wetland species". Farmed areas including hay lands are considered above the OHWM. The resulting area is the OHWM delineation of this analysis.

The OHWM delineation described above is compared with the presumptive determination of the OHWM by the USACE before the construction of the Garrison Dam. For each segment of the USACE survey, recommendations are made to either maintain or adjust, modify, or correct the USACE survey line. Changes to the USACE survey are only recommended if there is clear and convincing evidence.



The purpose of this technical report is to present ordinary high water mark (OHWM) analysis results of the historic Missouri River channel under what is now Lake Sakakawea. The river reach of interest extends from the northern boundary of the Fort Berthold Indian Reservation (approximately River Mile 1482) to the southern border of Sections 33 and 34, Township 153 North, Range 102 West (just beyond River Mile 1564), a distance of approximately 83 river miles (See Figure 1).

This analysis was initiated by State legislation, North Dakota Century Code chapter 61-33.1-03 (see Appendix A). The purpose is to delineate state owned lands below the OHWM prior to construction of the Garrison Dam. The North Dakota Industrial Commission Department of Mineral Resources (DMR) is identified as the state agency responsible for the work.



**Figure 1 Project Location Map** 

# 2.0 Ordinary High Water Mark Definition

#### 2.1 DEFINITION USED FOR DELINEATION

There are various definitions for the OHWM. The legislation that initiated this report states that the following definition be used for the analysis of the OHWM (see Appendix A):

- a. State case law regarding the identification of the point at which the presence of action of the water is so continuous as to destroy the value of the land for agricultural purposes, including hay lands. Land where the high and continuous presence of water has destroyed its value for agricultural purposes, including hay land, generally must be considered within the ordinary high water mark. The value for agricultural purposes is destroyed at the level where significant, major, and substantial terrestrial vegetation ends or ceases to grow. Lands having agricultural value capable of growing crops or hay, but not merely intermittent grazing or location of cattle, generally must be considered above the ordinary high water mark; and
- b. Subsection 3 of section 61-33-01 and section 47-06-05, which provide all accretions are presumed to be above the ordinary high water mark and are not sovereign lands. Accreted lands may be determined to be within the ordinary high water mark of the historical Missouri riverbed channel based on clear and convincing evidence. Areas of low-lying and flat lands where the ordinary high water mark may be impracticable to determine due to inconclusive aerial photography or inconclusive vegetation analysis must be presumed to be above the ordinary high water mark and owned by the riparian landowner.

In addition to the above, state statute and case law establishes that land where native hay has been more than intermittently harvested is presumed to be above the OHWM (see Appendix A).

# 2.2 OTHER DEFINITIONS

Other OHWM definitions provide additional background and support for the delineation method used for this analysis. The North Dakota State Engineer has a document titled Ordinary High Water Mark Delineation Guidelines dated January 2007 (ref 1). Other significant references include: 1) the U.S. Army Corps of Engineers Regulatory Guidance Letter dated 7 December 2005 (RGL 05-05)(ref 2), and 2) the 2009 Bureau of Land Management Manual for Surveying Instructions (ref 3). The Corps guidance is derived from 33 CFR 328.3(e). These documents provide information related to OHWM delineation on existing waterways and water bodies. Their use for this analysis is limited by the fact that all evidence of the historic OHWM of the Missouri River in the study area is under Lake Sakakawea and has been affected by sedimentation within the reservoir. However, these methods lend themselves somewhat to determining OHWM boundaries since they rely on physical evidence in making OHWM determinations. Some of these physical characteristics can be related to historic aerial photography (i.e., "deposition, change in plant community, destruction of terrestrial vegetation" as identified in Corps RGL 05-05) and can be used to help inform a remotely-determined OHWM.

Additionally, these guidance documents provide validity to the use of other non-physical evidence such as "lake and stream gage data, flood predictions, historic records of water



flow, and statistical evidence" (RGL 05-05). These types of methods were employed to assist in the determination of the OHWM.

#### 2.3 LEGAL RESEARCH

#### **Overview**

North Dakota Century Code, section 61-33.1-02, enacted by the legislature in 2017, governs mineral ownership of land inundated by the Pick-Sloan Missouri basin project dams:

The state sovereign land mineral ownership of the riverbed segments inundated by Pick-Sloan Missouri basin project dams extends only to the historical Missouri riverbed channel up to the ordinary high water mark. The state holds no claim or title to any minerals above the ordinary high water mark of the historical Missouri riverbed channel inundated by Pick-Sloan Missouri basin project dams, except for original grant lands acquired by the state under federal law and any minerals acquired by the state through purchase, foreclosure, or other written conveyance. Mineral ownership of the riverbed segments inundated by Pick-Sloan Missouri basin project dams which are located within the exterior boundaries of the Fort Berthold reservation and Standing Rock Indian reservation is controlled by other law and is excepted from this section.

Wilkinson v. Bd. of Univ. & Sch. Lands, 903 N.W.2d 51, 56–57 (N.D. 2017) (quoting 2017 N.D. Sess. Laws ch. 426, codified as N.D.C.C. § 61-33.1-02). The "historical Missouri riverbed channel" is statutorily defined as:

[T]he Missouri riverbed channel as it existed upon the closure of the Pick-Sloan Missouri basin project dams, and extends from the Garrison Dam to the southern border of sections 33 and 34, township 153 North, range 102 West which is the approximate location of river mile marker 1,565, and from the South Dakota border to river mile marker 1,303.

### **Review of Case Law**

In <u>State ex rel.</u> Sprynczynatyk, 592 N.W.2d 591 (N.D. 1999), the North Dakota Supreme Court upheld a Burleigh County District Court's decision determining the ordinary high water mark of the property in question. This case involved a property of approximately 62 acres located in Bismarck/Mandan on the Missouri River. The District Court's Findings of Fact, Conclusions of Law and Orders for Judgment and the accompanying Memorandum Decision & Order provide some relevance to determining OHWM boundaries. A summary of these two court documents that resulted from that case follows:

# 1. Memorandum Decision & Order (Civ. No910C01669) – Burleigh County District Court

A. The test for accretions is discussed on pages 2 and 3 (Appendix B). The accretion must be from "natural causes" and must be on the "bank of the river." "[U]ntil the accretion rises above the OHWM, the title does not vest in the riparian



- owner." Citing Borough of Ford City v. U.S., 345 F.2d 645 (3d Cir. 1965); Nelson v. Stratbucker, 325 N.W.2d 391 (Iowa 1982) (page 4, Appendix B).
- B. "The ordinary high water mark cannot be established by "average flows", or a point on the gage at any given place (page 5, Appendix B).
- C. Plaintiff's experts provided evidence to demonstrate the location of the OHWM at the property in question. The court agreed with the plaintiff's experts' conclusion. The evidence presented by the plaintiff's experts included:
  - No crops had been grown on the property although hay was harvested once in the 1990's.
  - The land in question had not changed significantly since 1968 according to one expert, based on personal observations and photographs.
  - The OHWM was determined to be located where a "shelf" was present. At this location, the land rose abruptly four to six feet, creating a shelf.
  - Sandy soils, coupled with aquatic vegetation typical of a wetland shore zone, were present below the shelf; upland vegetation was present above the shelf.
  - The area in question was determined to consist of class 7 and 8 soils which are unusable for any productive purpose. The soils were characterized as poorly drained with stratification indicative of frequent flooding and a high water table.
  - The land immediately to the east was characterized as a "terrace" with class 3 or 4 soils that would be suitable for cropland. The property at issue was termed a "floodplain" and the demarcation between the terrace and floodplain was the location of the OHWM.
  - Wetland vegetation dominated the area and the land was known to flood frequently.
  - The land was determined to be unreliable or useful for agricultural purposes, including the grazing of cattle since the saturated conditions would cause hoof rot. Fencing was determined to be infeasible.

# 2. Findings of Fact, Conclusions of Law, and Order for Judgment (Civ. No 91-C-1669) – Burleigh County District Court

This order provides a discussion of the defendant's assertions and evidence presented by the defendant that was used to determine the OHWM. The plaintiff provided evidence (as listed above) to demonstrate the presence of the OHWM, which the court concluded was "substantial and persuasive". An important statement in the document is that "aerial photos of the land and the areas adjoining it to the north and the south, make apparent, even to the layperson, the location o[f] the ordinary high watermark. The tree line of the river valley forest identifies the ordinary high watermark. Along the tree line there is a clear change in the characteristics of the land."

Several other cases were reviewed regarding the law of OHWM; however these cases discuss the standard for OHWM and not the method for determining the OHWM. They are included in Appendix B.



#### 3.1 DATA PROVIDED BY THE STATE

The following data were provided by the State:

- 1951 Aerial photographs covering the area of interest (TIF images, no georeferencing information). Photo 340\_263 was missing in the original files. Hard copies of the same were borrowed from the DMR for use with a stereoscope to allow three-dimensional viewing. The hard copy of Photo 340\_263 was scanned and inserted with the other TIF images.
- 1943 aerial photography (TIF images, no geo-referencing information).
- Tract boundaries (USACE survey) in GIS format.
- Geo-referenced 1943 USGS topographic maps covering the area of interest.

# 3.2 DATA COLLECTED FROM THE USACE, RIVERDALE OFFICE

The USACE office in Riverdale has much of the original records related to the construction of the Garrison Dam. As part of the project, scanners were brought to the Riverdale office and used to scan original records. The following data were collected:

- Segment (tract) maps (Appendix D).
- Appraisal documents (samples provided in Appendix D).
- Other miscellaneous data such as selected maps, and 1943 aerial photos (unindexed).

### 3.3 DATA COLLECTED FROM THE USACE, OMAHA DISTRICT

The following data were obtained from the USACE office in Omaha, NE:

- Missouri River pre-dam cross sections (Appendix D).
- Comments relating to the source of the information related to the river's edge on the segment (tract) maps (Appendix D).
- Geo-referenced 1943 topographic maps (these were found to be the same as the information from the State with some correction of maps on the western boundary).
- USACE project manuals and hydrologic information (collected from the web, ref. 4).

### 3.4 DATA FROM THE USGS

Flow data was collected from the USGS website at gage station 06330000, Missouri River NR Williston, ND, from 1929-1965.

https://waterdata.usqs.gov/nwis/uv?06330000

Although data was acquired up to 1965, to account for pre-Garrison Dam conditions, it was only analyzed from 1929-1953. Plots of the data are included in Appendix C.



#### 4.1 GEOREFERENCING THE AERIAL PHOTOGRAPHY

The State (DMR) provided single frame aerial imagery for the years 1951 and 1943. These data were initially georeferenced to 2016 National Agriculture Imagery Program (NAIP) orthophotos as described below. After initial review, it was decided that 1951 imagery provided the best data for the OHWM analysis. The 1951 imagery is closest date-wise to the completion of the earthwork for the Garrison Dam started in 1954. The 1943 photos were taken shortly after a significant flood event that washed out much of the floodplain area, limiting the usefulness of information available for analysis.

The DMR requested refinements to the georeferencing of the 1951 aerials by adding more control points. The methodology changed slightly from the initial georeferencing in that highly distorted areas and significant areas of overlap were clipped from the original photo to further minimize error. Additional details are provided below.

The 1943 data were used as a secondary reference as described further in Section 5.

### 4.1.1 Initial Georeferencing Methodology

Aerial photos stamped September 16, 1951 were georeferenced to the project using recent aerials photos from 2016 and 2003; both orthophotos were collected under the NAIP. Georeferenced photos started at the southeast corner of the project area and were referenced sequentially east to west. Approximately 10-15 control points were used to reference each image. In areas of overlap the images used similar referencing points to reduce the distortion. In the eastern portion of the project area, points referenced road crossings, driveways with farmsteads present in 2016 and 1951, and rock outcroppings. In limited cases where road crossings and unique identifiers were lacking, stream confluences were used to "generally" reference the photo. Once the photo was referenced, the control points were reviewed, and stream confluences were removed as reference points.

To start, reference points were placed on the corner of the photos and fitted to road crossings (where available) and geologic features. Points were then added to the center of the photo at road crossings, structures that appear in both the 2016 and 1951 photos, and rock outcroppings along the banks of the river. Rock outcrops were selected based on prominence and their ability to be easily distinguishable in both the 1951 and 2016 imagery. Once the image was georeferenced using a first order polynomial transformation, the residuals were checked. In cases where the residuals were relatively high, a second order polynomial transformation was used. The photo was checked for distortion and warping; control points were adjusted accordingly to minimize image distortion. Third order polynomials were not used due to warping of the images with limited control points.

Following georeferencing all the 1951 images within the project extent, photos were selected that minimized distortion and extended from bank to bank. The images selected for analysis are the following: 340\_317, 340\_315, 340\_265, 340\_264, 340\_312, 340\_269, 340\_271, 340\_273, 340\_275, and 340\_301. Images 340\_304, 340\_305, 340\_306, 340\_307 were not georeferenced; they do not show any portion of the river.



The 1943 aerial photos were georeferenced in the same manner as the 1951 images. Between 5-10 control points were set in the corners where like geographic features existed and in the bluff area along the river. The scale of the images is smaller than the 1951 images, in most cases several tiles span the river. Tiles that are positioned over areas exposed in current imagery were georeferenced first. This allowed photos spanning the open water on the current imagery to reference the 1943 photos that were referencing rock outcroppings, out buildings, road crossings, etc. To minimize the errors, photos that span the open water areas were georeferenced and corrected once the tiles spanning the river were complete. Images from 1943 primarily used a first order polynomial transformation. This transformation minimized the distortion of the rectified image. For each image, notes were recorded if the photo lacked reference points, was georeferenced based on other 1943 photos, or had referenced unique control points.

# **4.1.2 Georeferencing Refinements**

The georeferencing of the 1951 aerial photo set was refined as follows. The initial georeferencing utilized all of the photos. The refined georeferencing focused on using the following subset of the photos: 340\_317, 340\_317, 340\_315, 340\_314, 340\_313, 340\_312, 340\_311, 340\_310, 340\_309, 340\_263, 340\_364, 340\_269, 340\_270, 340\_271, 340\_272 340\_273, 340\_274, 340\_275, and 340\_301, 340\_300. Photos were inspected and clipped to remove highly distorted areas. Clipping the images on the far edge of the photos removed warping and creases. These distortions are due to a legacy of scanning paper maps. Areas extending one mile outside of the draft OHWM were clipped and retained as the base photo for use in delineating the OHWM.

Georeferenced photos started at the western edge of the project area and continued east to New Town. Approximately 30 to 50 control points were placed manually to reference each image. Road crossings, farmsteads, and rock outcrops were used to reference the 1951 imagery to the 2016 NAIP photos. To help with edge matching, auto-referencing was used in some cases. When auto-referencing was used, the amount of control points significantly increased. Auto-referenced points with relatively high residuals were deleted. A second or third order polynomial transformation was used to fit the 1951 photo to the 2016 photo. The photo was checked for distortion and warping; control points were adjusted accordingly to minimize image distortion.

To estimate the error in the georeferencing, 56 samples points (approximately 3 points per photo) were compared between the 1951 aerials and the 2016 NAIP aerials. The average error was 48.5 feet.

#### 4.2 GEOREFERENCING REFINEMENTS TO THE TRACT BOUNDARIES

The USACE property survey boundaries or tract boundaries were received from the State in GIS format. The tract boundaries show the land ownership adjacent to the river, extending approximately one mile outside of the river valley. These boundaries were used to locate appraisal data and compare farmed acreages.

A comparison of these boundaries to those evident on the 1951 aerial photo shows discrepancies. Metadata associated with the creation of the data (creator, how it was created, when the data was created) were not found. The spatial dataset was then adjusted to assign farmed areas within the area of interest accurately within a single parcel. The



method used to shift the boundaries to better represent tract boundaries accurately is discussed below.

A copy was made of the original dataset and corners of the parcels were adjusted using the Spatial Adjustment toolset within ArcGIS. The spatial adjustment tools allow for users to align features to another dataset by setting displacement links from the original dataset and creating a match point to the new location. Several options are available when spatially adjusting data; "rubber-sheeting" was selected to adjust boundaries to current parcel boundaries. The tract boundaries were adjusted to multiple parcel datasets that encompass the Missouri River: Williams and Mountrail to the north and McKenzie to the south.

The historic boundaries were adjusted only if there was clear evidence of similar geometric properties (i.e. section or quarter sections were identifiable between both datasets). Other properties that did not demonstrate clear geometric properties in both datasets were not referenced to modernized parcel boundaries, although the referencing from adjacent links fit the tract boundaries well to the modern parcels.

Displacement links were created to adjust the tract boundaries to the modernized parcel dataset. Additional displacement links were added on the western edge of the project area in the floodplain between Williams and McKenzie Counties along the U.S. Highway 85 bridge. The 1951 aerial photo was used to better delineate the tract boundaries in this area. Inferences were made in adjusting the field boundaries. In places where a tree line or roads existed and the boundary discrepancy was less than 100 feet, the boundary was adjusted to the aerial demarcation. In total, 253 displacement links were created to better represent the tract boundaries dataset.

To estimate the error in the data, areas of randomly selected tracts within each USACE segment map were compared with the areas of the same tracts within the GIS data set. The average area of the 32 randomly selected tracts was 210 acres. The average error was 6.9 acres or 3 percent.

#### 4.3 USACE CROSS SECTION DATA

Pre-dam Missouri River cross section data were provided by the USACE. There are 19 available sections throughout the 83-river-mile study reach. An example of one is shown in Figure 2. These sections provide detailed survey across the floodplain that adds significant elevation information beyond that of the 1943 USGS topographic maps. Note the valley walls on either side of the river, the river banks, and terracing within floodplain. The remainder of the cross sections used are provided in Appendix D.

#### 4.4 USGS FLOW DATA

Daily Missouri River pre-dam flow records from the USGS Williston gage were analyzed to determine a relatively frequent flood that would cause damage to riparian vegetation. Figure 3 shows a portion of pre-dam flow records. It can be seen that a discharge of approximately 80,000 cfs occurs regularly (statistically every two years). In some years it is exceeded twice in one year. Additional information is provided in Appendix C.



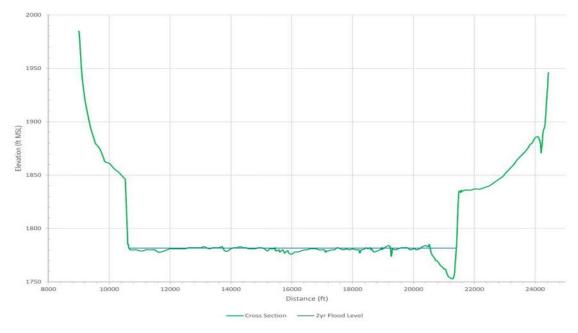


Figure 2 USACE Cross Section 1561.6

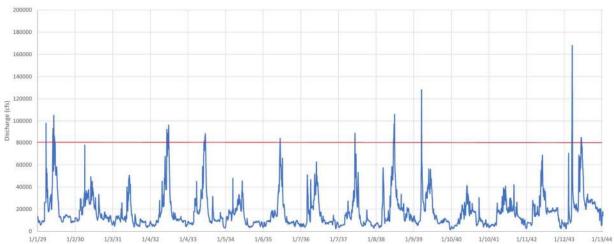


Figure 3 Missouri River Flow at Williston

#### 5.1 GENERAL APPROACH

The OHWM is caused by flood flows that occur relatively frequently, approximately every two years. These flood flows or the presence of action of the water are so continuous as to destroy the value of the land for agricultural purposes. The OHWM follows the water level and as a result is higher upstream than it is downstream. This variation in elevation along the study reach is estimated using a hydraulic model described below to calculate a water surface profile for the entire 83-mile study reach.

The modeled water surface profile is used with the 1943 topographic maps to estimate an area of inundation. This area of inundation is compared with evidence contained in historic aerial photographs. Adjustments to the area of inundation are made where photographic evidence matches the OHWM definition. Any farmed areas including hay lands are considered above the OHWM. The resulting area is the OHWM delineation of this analysis. Details of the methodology are provided below.

#### 5.2 FLOW MODELING

The USACE Hydraulic Engineer Center's River Analysis System (HEC-RAS) software was selected to develop a hydraulic model of the Missouri River for pre-dam conditions. This is made possible by the pre-dam cross-section data collected by the USACE. These data with USGS flow information from the gage at Williston provide a means to estimate the flood flow levels throughout the study reach. The flood flow levels that occur approximately every two years are shown in Figure 8. Details of the hydraulic model are included in Appendix E.

### 5.3 TOPOGRAPHIC INFORMATION

Applying the flood flow levels estimated by the hydraulic model to the 1943 topographic maps for the area results in an estimated area of flooding. The topographic maps have a 10-foot contour interval and interpolation is required for the area between contour lines. This area of flooding provides the first step toward delineating the OHWM. The next step is to compare the area of flooding with aerial photo interpretation as described below.

#### 5.4 AERIAL PHOTO INTERPRETATION

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Two sets of aerial photos are selected for pre-dam conditions, those taken in 1943 (on April 20, May 20 and 21), and those taken in 1951 (on September 16). The 1951 photos were selected as the more suitable set for the following reasons:

- The photos were taken closer to the date when the earthwork was completed for the Garrison Dam in 1954.
- There are no significant flood events preceding the photos that would erode the floodplain areas, potentially causing an erroneous setting of the OHWM delineation at an excessive elevation.
- Since the photos were taken in September, the woody vegetation had leaves that allowed for better photo interpretation.



The opposite applies to the 1943 photos. They are limited due to fact they are older; they were taken shortly after a significant flood event (168,000 cfs on March 31, see USGS data in Appendix C and ref. 4) that eroded much of the floodplain and washed out the OHWM; and the vegetation has less leaves for photo interpretation given the early spring date. There are significant other data that make the 1943 set useful as a secondary reference. Many of the 1943 photos have notes and delineated farmed areas on them that appear to match those found in the USACE appraisal documents at Riverdale. This information helped confirm appraisal data. They are also helpful in determining the progression of farming in the floodplain area when compared with the 1951 data set.

It should also be noted that the 1943 aerial photos were likely used to create the USGS 1943 topographic maps. The river bank in the maps was used by the USACE in establishing the property boundary along the river. This is the presumptive determination of the OHWM as stated in North Dakota Century Code chapter 61-33.1-03 para 1 (see Appendix A). Comparison of the river banks between 1943 and 1951 shows significant movement of the meander bends. This is the reason for a significant portion of the recommended OHWM modifications in this analysis.

The flooded area determined by the flow modeling and 1943 topographic maps as described above was reviewed in detail on the 1951 aerial photos. The OHWM was delineated as "that line below which the action of water is frequent enough either to prevent the growth of vegetation or to restrict its growth to predominantly wetland species". A stereoscope was used with overlapping aerial photos to better see three-dimensional landforms such as swales and to determine high and low areas.

Farmed and hayed areas were designated as above the OHWM. Accreted lands above the line which restrict vegetation to predominantly wetland species were also designated above the OHWM. Areas of low-lying and flat lands where the OHWM was impracticable to determine due to inconclusive aerial photography or inconclusive vegetation analysis was presumed to be above the OHWM.

#### 5.5 APPRAISAL DOCUMENTS

Appraisal documents were prepared by the USACE to purchase easements prior to the construction of the dam. These documents often provide tables of acreages and maps that identify and delineate various land uses and even vegetation and soils for a particular property or tract. The value of the easement is determined from these land uses. The appraisal documents, especially the maps, provided excellent information to support the delineation of farmed areas that were not readily identifiable in some aerial photos.

#### 5.6 REVIEW

The OHWM delineation was reviewed at various times during the process by geomorphologists, river engineers, wetland scientists with aerial photo interpretation expertise, and legal experts.

#### 5.7 CONSIDERATION OF ERROR

The OHWM was carefully delineated with available information. As with every process there are sources of error. The primary sources for this work include the following:

Aerial photo geo-referencing – See Section 4.1 for efforts made to minimize errors.



- Tract boundary survey See Section 4.2 for efforts made to minimize errors.
- Aerial photo resolution While the 1951 aerial photos are of relatively good quality, the resolution limits exact placement of lines.
- Aerial photo date The 1951 aerials were the most current available photos prior to the completion of earthwork for the Garrison Dam in 1954. Stream meandering occurring in the interim is not accounted for.



5-3

The OHWM delineation described in the previous section is compared with the presumptive determination of the OHWM by the USACE. Results are shown with the Bureau of Land Management (BLM) National Public Land Survey System quarter-quarter sections on Maps 1 through 18. Many of the BLM quarter-quarter sections near the river are irregular, not square 40-acre plots. The irregularity is likely a result of a survey done by a sinuous water course that is constantly moving.

For each segment of the USACE survey, recommendations are made to either maintain, adjust or modify, or correct the USACE survey line (See hatched areas on Maps 1 through 18). Changes to the USACE survey are only recommended if there is clear and convincing evidence. Table 1 and Table 2a show the results of the delineation where there is a direct correlation between the USACE survey and the delineation completed for this report (from the downstream end of the project to the approximate south boundary of Township 153N Range 101W, Section 6 or River Mile 1482 to 1553.5). Table 2b shows the detailed results in the project area where USACE survey is limited or not available (south of Township 153N Range 101W, Section 6 or upstream of River Mile 1553.5).

The last column of Table 2a shows provides the net change in OHWM area between the USACE survey line and the OHWM delineated by the project. This net change is not applicable where the USACE survey line is not available (shown as N/A in Table 2b). The USACE survey line starts at the downstream end of the project at River Mile 1482 and ends on the east bank of the river just upstream of River Mile 1557 (see Map 17). On the west bank of the river the USACE survey line ends at River 1553.5 (see Map 16).

Table 1. Overall OHWM Delineation Results

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| USACE OHWM area within project boundary (from River Mile 1482     |              |
|---|--------------|
| to 1553.5 on the west bank and from River Mile 1482 to River 1557 |              |
| on the east bank upstream of Williston, see Maps 16 and 17).      | 16,687 acres |
| Total area within the OHWM delineated by project (from River Mile |              |
| 1482 to 1564).  | 27,089 acres |
| Total increase in OHWM area (for reach of river where USACE and   |              |
| project overlap, from River Miles 1482 to 1553.5).                | 10,402 acres |
| Total increase in OHWM area (for reach of river where USACE and   |              |
| project overlap, from River Miles 1482 to 1553.5).                | 162%         |

Results for selected quarter-quarter sections are shown in Figures 4 through 7 to further explain different configurations.



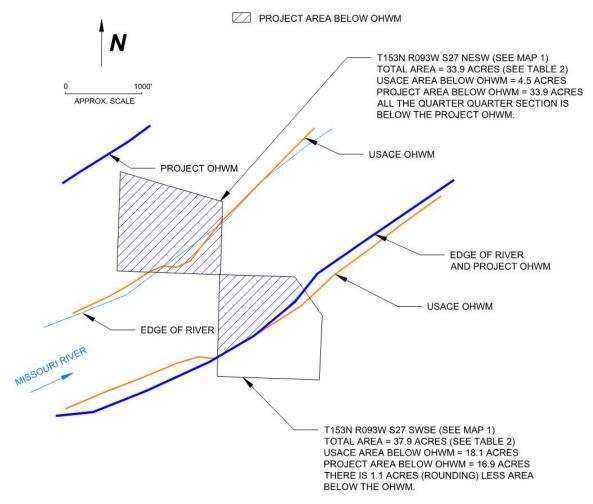


Figure 4 Example Quarter-Quarter Sections from Map 1

Figure 4 shows two quarter-quarter sections across the river from each other. The north quarter-quarter has a total area of 33.9 acres of which 4.5 acres is below the OHWM based on the USACE survey. The delineation for this project moves the OHWM further up the river bank in the shore area that frequently flooded putting the entire quarter-quarter section below the OHWM.

The project delineation for the south quarter-quarter section in Figure 4 decreases the area below the OHWM by 1.1 acres. This is likely due to more recent aerial photo information.



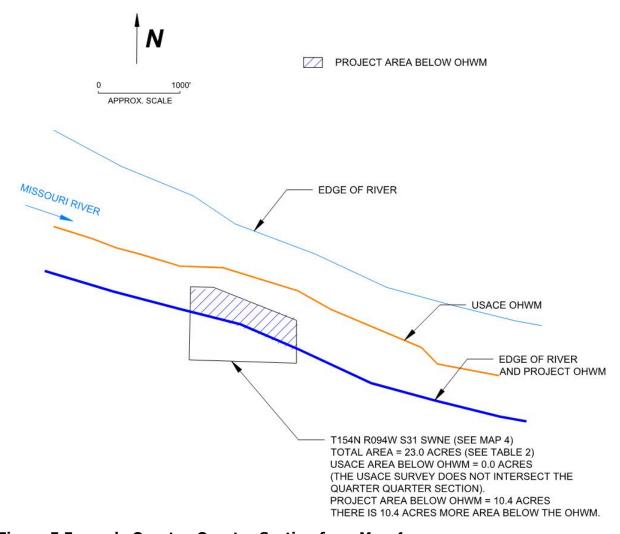


Figure 5 Example Quarter-Quarter Section from Map 4

Figure 5 shows an example where the USACE survey does not intersect a quarter-quarter section, but the delineation for this project does.

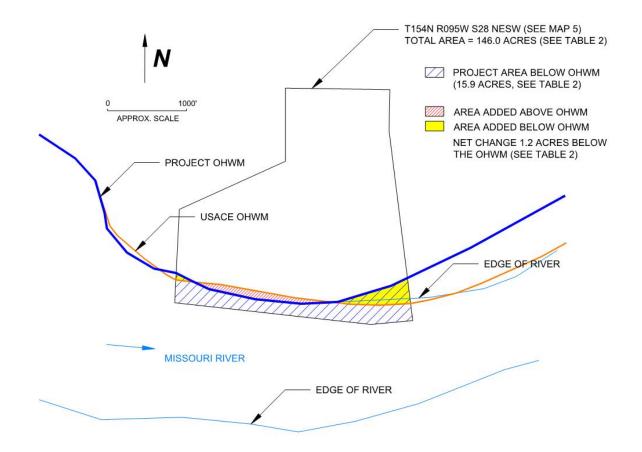


Figure 6 Example Quarter-Quarter Section from Map 5

Figure 6 shows an example where the project delineation both increases and decreases the area below the OHWM. If the net change shown in Table 2 is positive, there is more area below the OHWM based on the project delineation than the USACE survey.

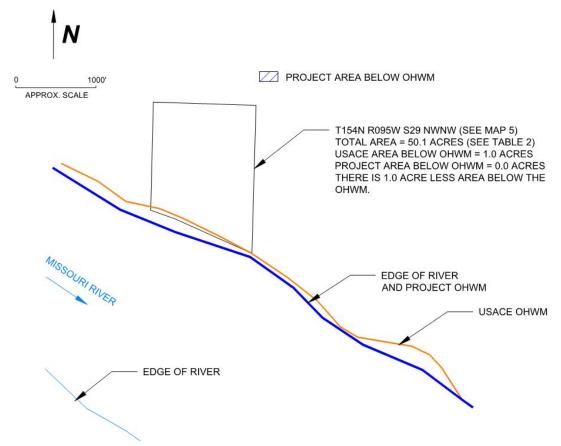


Figure 7 Second Example Quarter-Quarter Section from Map 5

Figure 7 shows an example where the USACE survey intersects the quarter-quarter section but the project OHWM delineation does not. The area below the USACE survey is added above the OHWM within the existing quarter-quarter boundaries. In the configuration shown, there is additional area above the OHWM that could be added to the quarter-quarter section if the boundaries where extended south. There are very few of these configurations found as a result of the project OHWM delineation. The existing quarter-quarter section boundaries where not changed as a part of this project.

# 7.0 References

- 1. North Dakota State Engineer, January 2007, Ordinary High Water Mark Delineation Guidelines.
- 2. U.S. Army Corps of Engineers, 7 December 2005, Regulatory Guidance Letter No. 05-05, Ordinary High Water Mark Identification.
- 3. U.S. Department of the Interior. 2009. Manual of Surveying Instructions: For the Survey of the Public Lands of the United States. Bureau of Land Management. Denver, CO: Government Printing Office.
- 4. U.S. Army Corps of Engineers, Omaha District, 1978, Missouri River Main Stem Reservoir System Reservoir Regulation Manual, Garrison Manual.



- 2a. Detailed OHWM Delineation Results (Downstream of River Mile 1553.5)
- 2b. Detailed OHWM Delineation Results (Upstream of River Mile 1553.5)

Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5)

| Table 2a. OHWM Delineat       |                       |                                       |                                       |                                       |                          |
|-------------------------------|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|
| Quarter Quarter Section<br>ID | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |
| 152N093W03SWSW                | 39.1                  | 0.0                                   | 4.6                                   | 34.6                                  | 4.6                      |
| 152N093W04NENW                | 45.9                  | 17.4                                  | 45.6                                  | 0.4                                   | 28.2                     |
| 152N093W04NESE                | 39.9                  | 0.0                                   | 0.1                                   | 39.8                                  | 0.1                      |
| 152N093W04NESW                | 4.2                   | 4.2                                   | 4.2                                   | 0.0                                   | 0.1                      |
| 152N093W04NWNE                | 57.6                  | 11.6                                  | 18.4                                  | 39.2                                  | 6.8                      |
| 152N093W04NWNW                | 1.2                   | 0.0                                   | 1.2                                   | 0.0                                   | 1.2                      |
| 152N093W04NWSE                | 20.6                  | 0.0                                   | 3.5                                   | 17.1                                  | 3.5                      |
| 152N093W04NWSW                | 33.9                  | 11.8                                  | 19.4                                  | 14.5                                  | 7.6                      |
| 152N093W04SENW                | 9.4                   | 8.3                                   | 9.4                                   | 0.0                                   | 1.1                      |
| 152N093W04SESE                | 22.1                  | 0.0                                   | 10.5                                  | 11.6                                  | 10.5                     |
| 152N093W04SESW                | 34.6                  | 7.6                                   | 12.8                                  | 21.9                                  | 5.1                      |
| 152N093W04SWNE                | 39.9                  | 3.0                                   | 6.5                                   | 33.5                                  | 3.5                      |
| 152N093W04SWNW                | 8.8                   | 8.5                                   | 8.8                                   | 0.0                                   | 0.3                      |
| 152N093W04SWSE                | 8.1                   | 6.0                                   | 7.3                                   | 0.8                                   | 1.3                      |
| 152N093W04SWSW                | 40.0                  | 0.0                                   | 0.1                                   | 39.9                                  | 0.1                      |
| 152N093W05NENE                | 48.0                  | 2.8                                   | 21.5                                  | 26.5                                  | 18.6                     |
| 152N093W05NESE                | 39.9                  | 0.0                                   | 0.1                                   | 39.7                                  | 0.1                      |
| 152N093W05SENE                | 39.7                  | 5.2                                   | 12.8                                  | 26.9                                  | 7.5                      |
| 152N093W09NENE                | 26.1                  | 9.7                                   | 11.9                                  | 14.2                                  | 2.2                      |
| 152N093W09NWNE                | 39.1                  | 6.6                                   | 6.1                                   | 33.0                                  | -0.4                     |
| 152N093W10NENE                | 36.4                  | 1.3                                   | 2.3                                   | 34.1                                  | 1.0                      |
| 152N093W10NENW                | 14.9                  | 0.0                                   | 1.0                                   | 14.0                                  | 1.0                      |
| 152N093W10NESE                | 43.3                  | 0.5                                   | 2.5                                   | 40.7                                  | 2.0                      |
| 152N093W10NWNE                | 24.4                  | 0.0                                   | 0.9                                   | 23.5                                  | 0.9                      |
| 152N093W10NWNW                | 12.0                  | 5.5                                   | 9.8                                   | 2.2                                   | 4.2                      |
| 152N093W10NWSE                | 48.1                  | 0.0                                   | 0.3                                   | 47.8                                  | 0.3                      |
| 152N093W10SENE                | 3.7                   | 3.1                                   | 3.4                                   | 0.3                                   | 0.2                      |
| 152N093W10SENW                | 30.6                  | 5.6                                   | 13.4                                  | 17.2                                  | 7.8                      |
| 152N093W10SWNE                | 17.5                  | 6.8                                   | 13.4                                  | 4.1                                   | 6.5                      |
| 152N093W10SWNW                | 40.0                  | 1.5                                   | 3.5                                   | 36.5                                  | 2.0                      |
| 152N093W11NESW                | 8.5                   | 1.2                                   | 0.7                                   | 7.8                                   | -0.5                     |
| 152N093W11SENW                | 39.3                  | 4.4                                   | 1.9                                   | 37.4                                  | -2.5                     |
| 152N093W11SWNW                | 18.4                  | 6.0                                   | 2.6                                   | 15.8                                  | -3.4                     |
| 152N099W05NENE                | 67.8                  | 0.0                                   | 0.6                                   | 67.2                                  | 0.6                      |
| 152N099W05NENW                | 52.5                  | 1.0                                   | 3.4                                   | 49.1                                  | 2.4                      |
| 152N099W05NWNE                | 60.9                  | 0.2                                   | 1.4                                   | 59.5                                  | 1.2                      |
| 152N099W05NWNW                | 57.1                  | 2.7                                   | 17.0                                  | 40.1                                  | 14.4                     |
| 152N099W06NENE                | 71.9                  | 4.5                                   | 36.6                                  | 35.3                                  | 32.1                     |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 152N099W06NENW   | 100.5                 | 4.0                                   | 44.1                                  | 56.4                                  | 40.1                     |  |
| 152N099W06NWNE   | 86.3                  | 3.0                                   | 43.2                                  | 43.2                                  | 40.2                     |  |
| 152N100W02NENW   | 62.9                  | 0.0                                   | 1.0                                   | 61.8                                  | 1.0                      |  |
| 152N100W02NWNW   | 17.8                  | 0.0                                   | 2.8                                   | 15.1                                  | 2.8                      |  |
| 152N100W02NWSW   | 60.3                  | 0.0                                   | 25.1                                  | 35.2                                  | 25.1                     |  |
| 152N100W02SWNW   | 42.7                  | 0.0                                   | 5.4                                   | 37.3                                  | 5.4                      |  |
| 152N100W02SWSW   | 56.5                  | 0.0                                   | 17.4                                  | 39.1                                  | 17.4                     |  |
| 152N100W03NENW   | 47.8                  | 2.0                                   | 3.6                                   | 44.2                                  | 1.6                      |  |
| 152N100W03NWNE   | 3.1                   | 0.8                                   | 0.0                                   | 3.1                                   | -0.8                     |  |
| 152N100W03NWSW   | 0.9                   | 0.1                                   | 0.9                                   | 0.0                                   | 0.9                      |  |
| 152N100W03SENW   | 0.6                   | 0.1                                   | 0.5                                   | 0.1                                   | 0.4                      |  |
| 152N100W03SESE   | 23.4                  | 0.0                                   | 18.5                                  | 4.8                                   | 18.5                     |  |
| 152N100W03SWNW   | 27.7                  | 0.3                                   | 6.0                                   | 21.7                                  | 5.7                      |  |
| 152N100W04NESE   | 13.0                  | 0.3                                   | 2.4                                   | 10.6                                  | 2.1                      |  |
| 152N100W04NWSE   | 25.8                  | 0.2                                   | 0.0                                   | 25.8                                  | -0.2                     |  |
| 152N100W04NWSW   | 29.3                  | 0.0                                   | 0.3                                   | 29.1                                  | 0.3                      |  |
| 152N100W04SESW   | 7.3                   | 0.8                                   | 3.6                                   | 3.7                                   | 2.8                      |  |
| 152N100W04SWSW   | 0.4                   | 0.0                                   | 0.4                                   | 0.0                                   | 0.4                      |  |
| 152N100W05NESW   | 12.1                  | 2.7                                   | 10.5                                  | 1.6                                   | 7.8                      |  |
| 152N100W05NWNE   | 40.9                  | 0.0                                   | 0.0                                   | 40.8                                  | 0.0                      |  |
| 152N100W05NWNW   | 10.6                  | 4.2                                   | 3.2                                   | 7.4                                   | -1.0                     |  |
| 152N100W05NWSW   | 40.0                  | 0.3                                   | 2.1                                   | 37.9                                  | 1.8                      |  |
| 152N100W05SENE   | 29.4                  | 0.0                                   | 0.1                                   | 29.3                                  | 0.1                      |  |
| 152N100W05SESW   | 37.4                  | 0.2                                   | 17.1                                  | 20.3                                  | 16.9                     |  |
| 152N100W05SWNE   | 0.5                   | 0.0                                   | 0.1                                   | 0.4                                   | 0.1                      |  |
| 152N100W05SWNW   | 31.5                  | 5.2                                   | 6.3                                   | 25.2                                  | 1.1                      |  |
| 152N100W05SWSE   | 9.2                   | 0.1                                   | 9.2                                   | 0.0                                   | 9.1                      |  |
| 152N100W06NENE   | 66.6                  | 9.0                                   | 8.3                                   | 58.3                                  | -0.7                     |  |
| 152N100W08NENE   | 39.9                  | 11.9                                  | 28.1                                  | 11.8                                  | 16.2                     |  |
| 152N100W08NENW   | 39.8                  | 0.0                                   | 0.0                                   | 39.8                                  | 0.0                      |  |
| 152N100W08NWNE   | 40.0                  | 0.4                                   | 11.3                                  | 28.7                                  | 10.9                     |  |
| 152N100W09NENW   | 0.2                   | 0.2                                   | 0.2                                   | 0.0                                   | 0.0                      |  |
| 152N100W09NWNW   | 21.6                  | 11.3                                  | 17.8                                  | 3.8                                   | 6.5                      |  |
| 152N100W09SENE   | 2.9                   | 0.0                                   | 0.0                                   | 2.9                                   | 0.0                      |  |
| 152N100W09SENW   | 27.7                  | 1.4                                   | 1.5                                   | 26.2                                  | 0.2                      |  |
| 152N100W09SWNW   | 39.9                  | 0.3                                   | 0.7                                   | 39.2                                  | 0.4                      |  |
| 152N100W10NENE   | 51.4                  | 0.0                                   | 17.1                                  | 34.3                                  | 17.1                     |  |
| 152N100W10NWNE   | 16.6                  | 0.0                                   | 8.4                                   | 8.2                                   | 8.4                      |  |
| 152N100W10SENW   | 33.6                  | 0.0                                   | 1.1                                   | 32.4                                  | 1.1                      |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 152N100W10SWNE   | 39.8                  | 0.0                                   | 0.0                                   | 39.8                                  | 0.0                      |  |
| 152N100W10SWNW   | 22.9                  | 0.0                                   | 8.6                                   | 14.3                                  | 8.6                      |  |
| 153N093W07NENE   | 40.0                  | 0.0                                   | 0.0                                   | 40.0                                  | 0.0                      |  |
| 153N093W07NESE   | 6.3                   | 0.0                                   | 6.3                                   | 0.0                                   | 6.3                      |  |
| 153N093W07NESW   | 39.8                  | 37.7                                  | 39.8                                  | 0.0                                   | 2.1                      |  |
| 153N093W07NWNE   | 23.9                  | 0.0                                   | 0.0                                   | 23.9                                  | 0.0                      |  |
| 153N093W07NWSE   | 30.1                  | 16.8                                  | 30.1                                  | 0.0                                   | 13.3                     |  |
| 153N093W07NWSW   | 39.0                  | 39.0                                  | 39.0                                  | 0.0                                   | 0.0                      |  |
| 153N093W07SENE   | 18.0                  | 0.0                                   | 0.0                                   | 18.0                                  | 0.0                      |  |
| 153N093W07SENW   | 5.5                   | 1.9                                   | 5.5                                   | 0.0                                   | 3.6                      |  |
| 153N093W07SESE   | 29.7                  | 24.8                                  | 29.7                                  | 0.0                                   | 4.9                      |  |
| 153N093W07SESW   | 39.9                  | 35.5                                  | 33.2                                  | 6.7                                   | -2.2                     |  |
| 153N093W07SWNE   | 0.0                   | 0.0                                   | 0.0                                   | 0.0                                   | 0.0                      |  |
| 153N093W07SWNW   | 9.9                   | 9.8                                   | 9.9                                   | 0.0                                   | 0.1                      |  |
| 153N093W07SWSE   | 39.9                  | 39.9                                  | 39.9                                  | 0.0                                   | 0.0                      |  |
| 153N093W07SWSW   | 39.0                  | 18.3                                  | 15.7                                  | 23.3                                  | -2.6                     |  |
| 153N093W08NESW   | 40.0                  | 0.0                                   | 1.3                                   | 38.7                                  | 1.3                      |  |
| 153N093W08NWSW   | 78.8                  | 0.0                                   | 64.3                                  | 14.5                                  | 64.3                     |  |
| 153N093W08SESW   | 53.8                  | 5.0                                   | 44.6                                  | 9.2                                   | 39.6                     |  |
| 153N093W08SWSE   | 40.0                  | 0.0                                   | 1.3                                   | 38.6                                  | 1.3                      |  |
| 153N093W08SWSW   | 0.5                   | 0.5                                   | 0.5                                   | 0.0                                   | 0.0                      |  |
| 153N093W17NENW   | 2.9                   | 0.8                                   | 2.9                                   | 0.0                                   | 2.1                      |  |
| 153N093W17NESE   | 40.0                  | 5.3                                   | 6.0                                   | 34.0                                  | 0.7                      |  |
| 153N093W17NWNE   | 38.7                  | 7.5                                   | 14.3                                  | 24.4                                  | 6.7                      |  |
| 153N093W17NWNW   | 13.9                  | 13.1                                  | 7.9                                   | 6.1                                   | -5.2                     |  |
| 153N093W17NWSE   | 27.9                  | 27.9                                  | 27.9                                  | 0.0                                   | 0.0                      |  |
| 153N093W17SENE   | 40.0                  | 0.7                                   | 1.1                                   | 38.9                                  | 0.4                      |  |
| 153N093W17SESE   | 40.0                  | 14.7                                  | 14.6                                  | 25.4                                  | -0.1                     |  |
| 153N093W17SWNE   | 31.3                  | 29.4                                  | 29.5                                  | 1.8                                   | 0.1                      |  |
| 153N093W17SWNW   | 29.0                  | 0.4                                   | 0.0                                   | 29.0                                  | -0.4                     |  |
| 153N093W17SWSE   | 29.8                  | 25.8                                  | 29.8                                  | 0.0                                   | 4.0                      |  |
| 153N093W18NENE   | 53.4                  | 41.2                                  | 39.0                                  | 14.4                                  | -2.2                     |  |
| 153N093W18NWNE   | 27.0                  | 0.3                                   | 2.7                                   | 24.4                                  | 2.4                      |  |
| 153N093W20NESE   | 27.3                  | 0.0                                   | 0.7                                   | 26.6                                  | 0.7                      |  |
| 153N093W20SESE   | 39.9                  | 0.0                                   | 0.2                                   | 39.7                                  | 0.2                      |  |
| 153N093W20SWSE   | 12.3                  | 0.0                                   | 0.3                                   | 12.0                                  | 0.3                      |  |
| 153N093W20WE   | 228.9                 | 207.2                                 | 217.2                                 | 11.7                                  | 10.0                     |  |
| 153N093W26SENW   | 36.7                  | 0.0                                   | 0.1                                   | 36.5                                  | 0.1                      |  |
| 153N093W26SW   | 84.5                  | 62.9                                  | 81.5                                  | 3.1                                   | 18.6                     |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 153N093W26SWNW   | 13.4                  | 0.0                                   | 0.9                                   | 12.6                                  | 0.9                      |  |
| 153N093W27NESW   | 33.9                  | 4.5                                   | 33.9                                  | 0.0                                   | 29.4                     |  |
| 153N093W27NWSE   | 11.8                  | 11.2                                  | 11.8                                  | 0.0                                   | 0.6                      |  |
| 153N093W27NWSW   | 39.9                  | 0.0                                   | 32.6                                  | 7.3                                   | 32.6                     |  |
| 153N093W27SENE   | 1.5                   | 0.0                                   | 0.6                                   | 1.0                                   | 0.6                      |  |
| 153N093W27SESW   | 39.9                  | 35.3                                  | 38.5                                  | 1.3                                   | 3.3                      |  |
| 153N093W27SWNW   | 2.6                   | 0.0                                   | 0.2                                   | 2.4                                   | 0.2                      |  |
| 153N093W27SWSE   | 37.93                 | 18.07                                 | 16.94                                 | 20.99                                 | -1.13                    |  |
| 153N093W27SWSW   | 39.9                  | 21.4                                  | 39.9                                  | 0.0                                   | 18.5                     |  |
| 153N093W29NENW   | 13.9                  | 13.7                                  | 13.7                                  | 0.1                                   | 0.0                      |  |
| 153N093W29NESE   | 9.5                   | 4.4                                   | 8.0                                   | 1.5                                   | 3.5                      |  |
| 153N093W29NESW   | 39.9                  | 0.1                                   | 1.4                                   | 38.5                                  | 1.3                      |  |
| 153N093W29NWNE   | 30.5                  | 8.1                                   | 8.5                                   | 21.9                                  | 0.4                      |  |
| 153N093W29NWSE   | 28.2                  | 12.2                                  | 21.5                                  | 6.7                                   | 9.4                      |  |
| 153N093W29SENW   | 27.7                  | 8.5                                   | 9.4                                   | 18.3                                  | 0.9                      |  |
| 153N093W29SESE   | 40.0                  | 23.1                                  | 34.4                                  | 5.6                                   | 11.3                     |  |
| 153N093W29SWNE   | 1.0                   | 1.0                                   | 1.0                                   | 0.0                                   | 0.0                      |  |
| 153N093W29SWSE   | 39.9                  | 0.4                                   | 4.8                                   | 35.1                                  | 4.4                      |  |
| 153N093W32NENE   | 39.9                  | 0.4                                   | 1.5                                   | 38.5                                  | 1.1                      |  |
| 153N093W33NENE   | 13.2                  | 1.6                                   | 3.9                                   | 9.3                                   | 2.3                      |  |
| 153N093W33NENW   | 12.9                  | 1.1                                   | 2.2                                   | 10.7                                  | 1.1                      |  |
| 153N093W33NN   | 143.3                 | 126.6                                 | 143.3                                 | 0.0                                   | 16.6                     |  |
| 153N093W33NWNE   | 8.9                   | 1.2                                   | 4.4                                   | 4.5                                   | 3.2                      |  |
| 153N093W33NWNW   | 25.9                  | 0.7                                   | 2.8                                   | 23.2                                  | 2.1                      |  |
| 153N093W34NENW   | 40.0                  | 1.0                                   | 3.7                                   | 36.3                                  | 2.7                      |  |
| 153N093W34NWNW   | 39.9                  | 13.6                                  | 17.0                                  | 22.8                                  | 3.5                      |  |
| 153N093W35NESE   | 40.8                  | 0.0                                   | 0.6                                   | 40.2                                  | 0.6                      |  |
| 153N093W35NWSE   | 5.4                   | 0.0                                   | 2.1                                   | 3.3                                   | 2.1                      |  |
| 153N093W35SESE   | 25.9                  | 0.0                                   | 10.5                                  | 15.5                                  | 10.5                     |  |
| 153N093W35SWSE   | 0.3                   | 0.0                                   | 0.3                                   | 0.0                                   | 0.3                      |  |
| 153N093W35WE   | 114.4                 | 96.0                                  | 111.4                                 | 3.0                                   | 15.4                     |  |
| 153N093W36SWSW   | 40.1                  | 0.0                                   | 0.3                                   | 39.8                                  | 0.3                      |  |
| 153N094W02NENW   | 18.5                  | 0.0                                   | 0.2                                   | 18.3                                  | 0.2                      |  |
| 153N094W02NESW   | 25.6                  | 0.0                                   | 0.6                                   | 24.9                                  | 0.6                      |  |
| 153N094W02SESW   | 40.0                  | 0.0                                   | 0.0                                   | 39.9                                  | 0.0                      |  |
| 153N094W02SWSW   | 19.2                  | 0.4                                   | 0.1                                   | 19.1                                  | -0.3                     |  |
| 153N094W03NENE   | 515.0                 | 4.8                                   | 514.3                                 | 0.8                                   | 509.4                    |  |
| 153N094W03SESE   | 0.4                   | 0.0                                   | 0.0                                   | 0.4                                   | 0.0                      |  |
| 153N094W04NENE   | 0.2                   | 0.0                                   | 0.2                                   | 0.0                                   | 0.2                      |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 153N094W04NWNE   | 34.5                  | 0.0                                   | 3.0                                   | 31.4                                  | 3.0                      |  |
| 153N094W04NWSE   | 25.5                  | 0.0                                   | 6.1                                   | 19.4                                  | 6.1                      |  |
| 153N094W04SENE   | 9.6                   | 0.0                                   | 0.8                                   | 8.8                                   | 0.8                      |  |
| 153N094W04SESE   | 236.9                 | 0.2                                   | 230.5                                 | 6.4                                   | 230.2                    |  |
| 153N094W04SWSE   | 13.8                  | 0.0                                   | 9.0                                   | 4.9                                   | 9.0                      |  |
| 153N094W09NENE   | 19.0                  | 0.0                                   | 1.5                                   | 17.4                                  | 1.5                      |  |
| 153N094W09NWNE   | 32.1                  | 0.0                                   | 3.1                                   | 28.9                                  | 3.1                      |  |
| 153N094W10NENE   | 28.4                  | 0.6                                   | 0.0                                   | 28.4                                  | -0.6                     |  |
| 153N094W10NENW   | 2.2                   | 0.3                                   | 0.8                                   | 1.4                                   | 0.5                      |  |
| 153N094W10NESE   | 39.9                  | 0.1                                   | 0.3                                   | 39.6                                  | 0.2                      |  |
| 153N094W10NWNE   | 39.7                  | 3.2                                   | 20.5                                  | 19.2                                  | 17.3                     |  |
| 153N094W10NWNW   | 7.9                   | 0.0                                   | 0.1                                   | 7.9                                   | 0.1                      |  |
| 153N094W10SENE   | 9.6                   | 0.9                                   | 4.2                                   | 5.4                                   | 3.3                      |  |
| 153N094W10SENW   | 35.1                  | 0.0                                   | 1.1                                   | 34.1                                  | 1.1                      |  |
| 153N094W10SWNE   | 21.8                  | 0.1                                   | 1.3                                   | 20.5                                  | 1.2                      |  |
| 153N094W11NESW   | 18.5                  | 2.7                                   | 2.4                                   | 16.1                                  | -0.3                     |  |
| 153N094W11NWSE   | 2.7                   | 0.7                                   | 1.0                                   | 1.7                                   | 0.3                      |  |
| 153N094W11NWSW   | 31.5                  | 1.8                                   | 3.9                                   | 27.6                                  | 2.1                      |  |
| 153N094W11SESE   | 26.7                  | 2.1                                   | 5.3                                   | 21.4                                  | 3.2                      |  |
| 153N094W11SWNE   | 63.5                  | 0.0                                   | 14.4                                  | 49.1                                  | 14.4                     |  |
| 153N094W11SWSE   | 38.7                  | 0.5                                   | 1.8                                   | 36.9                                  | 1.3                      |  |
| 153N094W12NESE   | 40.0                  | 39.8                                  | 38.5                                  | 1.5                                   | -1.4                     |  |
| 153N094W12NESW   | 10.3                  | 5.4                                   | 10.3                                  | 0.0                                   | 4.9                      |  |
| 153N094W12NWSE   | 38.0                  | 35.9                                  | 37.2                                  | 0.8                                   | 1.3                      |  |
| 153N094W12SENE   | 12.0                  | 12.0                                  | 12.0                                  | 0.0                                   | 0.0                      |  |
| 153N094W12SESE   | 40.0                  | 3.7                                   | 2.0                                   | 38.1                                  | -1.7                     |  |
| 153N094W12SESW   | 39.9                  | 3.3                                   | 33.6                                  | 6.2                                   | 30.4                     |  |
| 153N094W12SWNE   | 5.4                   | 5.4                                   | 5.4                                   | 0.0                                   | 0.0                      |  |
| 153N094W12SWSE   | 40.1                  | 2.0                                   | 7.8                                   | 32.3                                  | 5.8                      |  |
| 153N094W12SWSW   | 33.3                  | 3.0                                   | 26.9                                  | 6.4                                   | 23.9                     |  |
| 153N098W01NENW   | 37.3                  | 0.0                                   | 6.7                                   | 30.5                                  | 6.7                      |  |
| 153N098W01NWNW   | 5.4                   | 0.0                                   | 5.1                                   | 0.3                                   | 5.1                      |  |
| 153N098W01SWNW   | 27.9                  | 0.0                                   | 6.7                                   | 21.2                                  | 6.7                      |  |
| 153N098W02NWSE   | 12.0                  | 0.1                                   | 0.0                                   | 12.0                                  | 0.0                      |  |
| 153N098W02SESW   | 31.7                  | 0.0                                   | 1.0                                   | 30.7                                  | 1.0                      |  |
| 153N098W02SWNE   | 27.0                  | 0.1                                   | 0.0                                   | 27.0                                  | -0.1                     |  |
| 153N098W02SWSE   | 0.1                   | 0.0                                   | 0.0                                   | 0.0                                   | 0.0                      |  |
| 153N098W11NENE   | 31.6                  | 0.0                                   | 1.4                                   | 30.2                                  | 1.4                      |  |
| 153N098W11NENW   | 14.3                  | 2.5                                   | 8.2                                   | 6.1                                   | 5.7                      |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 153N098W11NESE   | 55.7                  | 0.0                                   | 28.6                                  | 27.1                                  | 28.6                     |  |
| 153N098W11NESW   | 0.9                   | 0.1                                   | 0.6                                   | 0.3                                   | 0.5                      |  |
| 153N098W11NWNE   | 93.5                  | 0.0                                   | 92.0                                  | 1.6                                   | 92.0                     |  |
| 153N098W11NWNW   | 73.0                  | 2.8                                   | 8.3                                   | 64.6                                  | 5.6                      |  |
| 153N098W11NWSW   | 35.3                  | 1.3                                   | 1.6                                   | 33.7                                  | 0.3                      |  |
| 153N098W11SENE   | 35.4                  | 0.0                                   | 3.9                                   | 31.4                                  | 3.9                      |  |
| 153N098W11SESE   | 3.1                   | 1.1                                   | 3.1                                   | 0.0                                   | 2.1                      |  |
| 153N098W11SESW   | 29.4                  | 0.2                                   | 2.1                                   | 27.3                                  | 1.9                      |  |
| 153N098W11SWSE   | 3.1                   | 0.0                                   | 0.9                                   | 2.2                                   | 0.9                      |  |
| 153N098W12SESE   | 40.2                  | 0.0                                   | 0.2                                   | 40.0                                  | 0.1                      |  |
| 153N098W12SESW   | 37.6                  | 0.2                                   | 3.2                                   | 34.3                                  | 3.1                      |  |
| 153N098W12SWSW   | 12.9                  | 1.6                                   | 4.8                                   | 8.1                                   | 3.2                      |  |
| 153N098W13NENW   | 8.9                   | 0.2                                   | 5.7                                   | 3.1                                   | 5.6                      |  |
| 153N098W13NWNE   | 38.8                  | 0.0                                   | 3.1                                   | 35.7                                  | 3.1                      |  |
| 153N098W13NWSE   | 19.9                  | 0.0                                   | 3.1                                   | 16.8                                  | 3.1                      |  |
| 153N098W13SWNE   | 22.3                  | 0.0                                   | 4.4                                   | 17.9                                  | 4.4                      |  |
| 153N098W13SWSE   | 27.6                  | 0.0                                   | 0.1                                   | 27.5                                  | 0.1                      |  |
| 153N098W14NENE   | 535.1                 | 3.7                                   | 125.2                                 | 409.9                                 | 121.5                    |  |
| 153N098W21NESE   | 61.5                  | 0.0                                   | 46.2                                  | 15.3                                  | 46.2                     |  |
| 153N098W21NESW   | 131.7                 | 0.0                                   | 68.8                                  | 62.9                                  | 68.8                     |  |
| 153N098W21NWSE   | 103.3                 | 0.0                                   | 74.4                                  | 28.9                                  | 74.4                     |  |
| 153N098W21NWSW   | 234.1                 | 0.0                                   | 82.4                                  | 151.6                                 | 82.4                     |  |
| 153N098W22NENE   | 45.9                  | 0.2                                   | 7.0                                   | 38.9                                  | 6.8                      |  |
| 153N098W22NWNE   | 40.0                  | 0.0                                   | 0.0                                   | 39.9                                  | 0.0                      |  |
| 153N098W22NWSW   | 21.7                  | 0.0                                   | 15.8                                  | 5.8                                   | 15.8                     |  |
| 153N098W22SENW   | 28.4                  | 0.1                                   | 5.0                                   | 23.4                                  | 4.9                      |  |
| 153N098W22SWNE   | 7.9                   | 0.2                                   | 2.0                                   | 5.9                                   | 1.8                      |  |
| 153N098W22SWNW   | 39.8                  | 0.0                                   | 0.8                                   | 39.0                                  | 0.8                      |  |
| 153N098W23NESE   | 4.8                   | 0.2                                   | 1.6                                   | 3.2                                   | 1.3                      |  |
| 153N098W23NWSE   | 66.5                  | 3.1                                   | 17.6                                  | 48.9                                  | 14.5                     |  |
| 153N098W23SENW   | 22.5                  | 0.0                                   | 5.9                                   | 16.6                                  | 5.9                      |  |
| 153N098W23SWNE   | 13.7                  | 0.0                                   | 2.6                                   | 11.1                                  | 2.6                      |  |
| 153N098W23SWNW   | 13.8                  | 0.0                                   | 7.5                                   | 6.3                                   | 7.5                      |  |
| 153N098W24NENW   | 1.8                   | 0.0                                   | 0.0                                   | 1.8                                   | 0.0                      |  |
| 153N098W24NESW   | 37.6                  | 0.0                                   | 1.3                                   | 36.2                                  | 1.3                      |  |
| 153N098W24NWNE   | 39.0                  | 0.0                                   | 0.0                                   | 39.0                                  | 0.0                      |  |
| 153N098W24SENW   | 16.2                  | 0.0                                   | 0.6                                   | 15.6                                  | 0.6                      |  |
| 153N098W24SWSW   | 57.9                  | 1.2                                   | 2.0                                   | 55.9                                  | 0.8                      |  |
| 153N098W26SWNE   | 92.4                  | 0.9                                   | 7.3                                   | 85.1                                  | 6.4                      |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 153N098W27NENE   | 934.9                 | 17.6                                  | 178.7                                 | 756.3                                 | 161.1                    |  |
| 153N098W27NWNW   | 14.3                  | 2.6                                   | 7.6                                   | 6.7                                   | 5.0                      |  |
| 153N098W27NWSW   | 69.6                  | 2.5                                   | 14.4                                  | 55.2                                  | 11.9                     |  |
| 153N098W28NESE   | 11.2                  | 1.7                                   | 10.3                                  | 0.9                                   | 8.6                      |  |
| 153N098W28SESE   | 36.9                  | 0.8                                   | 12.4                                  | 24.5                                  | 11.6                     |  |
| 153N098W28SWSE   | 9.6                   | 0.8                                   | 4.8                                   | 4.8                                   | 4.0                      |  |
| 153N098W29NENE   | 276.2                 | 0.0                                   | 43.9                                  | 232.3                                 | 43.9                     |  |
| 153N098W29NESW   | 39.8                  | 0.0                                   | 2.4                                   | 37.4                                  | 2.4                      |  |
| 153N098W29NWSE   | 31.8                  | 0.0                                   | 2.7                                   | 29.1                                  | 2.7                      |  |
| 153N098W29NWSW   | 61.4                  | 0.2                                   | 5.2                                   | 56.2                                  | 5.0                      |  |
| 153N098W29SESW   | 7.5                   | 0.0                                   | 6.1                                   | 1.4                                   | 6.1                      |  |
| 153N098W29SWSE   | 1.7                   | 0.0                                   | 1.7                                   | 0.0                                   | 1.7                      |  |
| 153N098W30NWNW   | 38.6                  | 0.0                                   | 0.3                                   | 38.3                                  | 0.3                      |  |
| 153N098W30NWSW   | 101.5                 | 42.1                                  | 88.4                                  | 13.1                                  | 46.3                     |  |
| 153N098W30SESE   | 37.5                  | 0.1                                   | 4.1                                   | 33.4                                  | 4.0                      |  |
| 153N098W30SWNW   | 37.2                  | 10.5                                  | 14.9                                  | 22.4                                  | 4.4                      |  |
| 153N098W30SWSW   | 16.9                  | 5.6                                   | 14.5                                  | 2.4                                   | 9.0                      |  |
| 153N098W31NENE   | 2.1                   | 0.0                                   | 2.1                                   | 0.0                                   | 2.1                      |  |
| 153N098W31NENW   | 30.3                  | 0.0                                   | 9.0                                   | 21.3                                  | 9.0                      |  |
| 153N098W31NWNE   | 15.6                  | 0.0                                   | 8.2                                   | 7.4                                   | 8.2                      |  |
| 153N098W31NWNW   | 5.4                   | 0.0                                   | 5.4                                   | 0.0                                   | 5.4                      |  |
| 153N098W31NWSE   | 444.1                 | 23.4                                  | 94.9                                  | 349.2                                 | 71.5                     |  |
| 153N098W32NENE   | 15.2                  | 2.7                                   | 13.4                                  | 1.9                                   | 10.7                     |  |
| 153N098W32NWNE   | 7.0                   | 1.0                                   | 7.0                                   | 0.0                                   | 5.9                      |  |
| 153N098W32SENE   | 39.8                  | 0.0                                   | 1.4                                   | 38.3                                  | 1.4                      |  |
| 153N098W32SWNE   | 36.9                  | 0.0                                   | 1.5                                   | 35.4                                  | 1.5                      |  |
| 153N098W33NENW   | 32.9                  | 0.3                                   | 5.2                                   | 27.7                                  | 5.0                      |  |
| 153N098W33NWNE   | 39.9                  | 0.0                                   | 0.0                                   | 39.9                                  | 0.0                      |  |
| 153N098W33NWNW   | 19.5                  | 0.6                                   | 7.1                                   | 12.4                                  | 6.6                      |  |
| 153N099W23NESE   | 16.1                  | 3.8                                   | 1.7                                   | 14.4                                  | -2.1                     |  |
| 153N099W23NESW   | 32.3                  | 1.1                                   | 1.6                                   | 30.7                                  | 0.5                      |  |
| 153N099W23NWSE   | 19.1                  | 2.2                                   | 1.0                                   | 18.1                                  | -1.2                     |  |
| 153N099W23NWSW   | 40.0                  | 0.0                                   | 0.2                                   | 39.9                                  | 0.2                      |  |
| 153N099W23SESE   | 40.0                  | 1.0                                   | 0.1                                   | 39.9                                  | -1.0                     |  |
| 153N099W23SESW   | 16.6                  | 1.3                                   | 2.3                                   | 14.3                                  | 1.0                      |  |
| 153N099W23SWSE   | 35.3                  | 1.0                                   | 0.1                                   | 35.2                                  | -0.9                     |  |
| 153N099W23SWSW   | 5.7                   | 0.0                                   | 0.3                                   | 5.4                                   | 0.3                      |  |
| 153N099W24NESW   | 28.3                  | 0.6                                   | 3.7                                   | 24.7                                  | 3.1                      |  |
| 153N099W24NWSE   | 39.8                  | 0.0                                   | 0.2                                   | 39.6                                  | 0.2                      |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 153N099W24NWSW   | 16.4                  | 1.6                                   | 1.1                                   | 15.3                                  | -0.6                     |  |
| 153N099W24SESE   | 39.8                  | 1.3                                   | 2.0                                   | 37.7                                  | 0.8                      |  |
| 153N099W24SESW   | 23.5                  | 0.7                                   | 1.2                                   | 22.2                                  | 0.6                      |  |
| 153N099W24SWSE   | 19.5                  | 5.4                                   | 8.8                                   | 10.7                                  | 3.4                      |  |
| 153N099W24SWSW   | 38.2                  | 3.1                                   | 1.4                                   | 36.8                                  | -1.7                     |  |
| 153N099W25NENE   | 21.7                  | 6.5                                   | 10.1                                  | 11.7                                  | 3.6                      |  |
| 153N099W25NESW   | 40.0                  | 3.2                                   | 7.0                                   | 33.0                                  | 3.8                      |  |
| 153N099W25NWSW   | 38.9                  | 17.4                                  | 30.9                                  | 8.0                                   | 13.5                     |  |
| 153N099W25SENE   | 4.0                   | 2.1                                   | 2.1                                   | 1.9                                   | 0.0                      |  |
| 153N099W25SESW   | 39.9                  | 9.0                                   | 19.3                                  | 20.7                                  | 10.2                     |  |
| 153N099W25SWSE   | 40.0                  | 0.0                                   | 3.4                                   | 36.6                                  | 3.4                      |  |
| 153N099W25SWSW   | 20.0                  | 0.4                                   | 3.2                                   | 16.7                                  | 2.9                      |  |
| 153N099W26NENW   | 12.0                  | 0.0                                   | 0.0                                   | 12.0                                  | 0.0                      |  |
| 153N099W26NWSE   | 23.9                  | 0.0                                   | 0.0                                   | 23.9                                  | 0.0                      |  |
| 153N099W26SENW   | 4.7                   | 0.0                                   | 0.0                                   | 4.7                                   | 0.0                      |  |
| 153N099W26SWNW   | 26.9                  | 0.5                                   | 1.9                                   | 25.0                                  | 1.4                      |  |
| 153N099W31NESE   | 61.7                  | 1.5                                   | 16.8                                  | 44.9                                  | 15.3                     |  |
| 153N099W31SENE   | 106.3                 | 0.0                                   | 21.9                                  | 84.4                                  | 21.9                     |  |
| 153N099W31SESW   | 39.5                  | 0.0                                   | 0.0                                   | 39.5                                  | 0.0                      |  |
| 153N099W31SWSE   | 10.5                  | 0.0                                   | 0.0                                   | 10.5                                  | 0.0                      |  |
| 153N099W32NENE   | 25.9                  | 0.0                                   | 0.1                                   | 25.9                                  | 0.1                      |  |
| 153N099W32NESE   | 36.0                  | 0.9                                   | 3.7                                   | 32.3                                  | 2.8                      |  |
| 153N099W32NWNE   | 30.8                  | 0.0                                   | 0.0                                   | 30.8                                  | 0.0                      |  |
| 153N099W32NWSE   | 8.8                   | 0.7                                   | 3.5                                   | 5.3                                   | 2.8                      |  |
| 153N099W32SENW   | 84.3                  | 0.2                                   | 14.6                                  | 69.8                                  | 14.4                     |  |
| 153N099W32SESW   | 10.2                  | 0.0                                   | 0.0                                   | 10.1                                  | 0.0                      |  |
| 153N099W32SWSE   | 37.4                  | 0.4                                   | 1.2                                   | 36.2                                  | 0.8                      |  |
| 153N099W33NENE   | 34.3                  | 0.5                                   | 0.0                                   | 34.3                                  | -0.5                     |  |
| 153N099W33NENW   | 22.2                  | 0.2                                   | 5.2                                   | 17.1                                  | 4.9                      |  |
| 153N099W33NWNE   | 25.4                  | 0.9                                   | 2.5                                   | 22.9                                  | 1.6                      |  |
| 153N099W33NWNW   | 21.8                  | 0.0                                   | 0.9                                   | 20.9                                  | 0.9                      |  |
| 153N099W34NESE   | 36.7                  | 0.8                                   | 2.2                                   | 34.5                                  | 1.4                      |  |
| 153N099W34NESW   | 4.3                   | 0.5                                   | 1.5                                   | 2.8                                   | 1.0                      |  |
| 153N099W34NWSE   | 24.4                  | 0.6                                   | 3.4                                   | 20.9                                  | 2.8                      |  |
| 153N099W34SENW   | 37.9                  | 0.2                                   | 0.6                                   | 37.3                                  | 0.5                      |  |
| 153N099W34SWNW   | 17.0                  | 0.3                                   | 0.6                                   | 16.4                                  | 0.2                      |  |
| 153N099W35NESW   | 39.1                  | 0.0                                   | 0.9                                   | 38.2                                  | 0.9                      |  |
| 153N099W35NWSW   | 40.1                  | 0.0                                   | 1.7                                   | 38.4                                  | 1.6                      |  |
| 153N099W35SESE   | 5.4                   | 0.0                                   | 0.7                                   | 4.7                                   | 0.7                      |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 153N099W35SESW   | 4.1                   | 0.8                                   | 3.9                                   | 0.2                                   | 3.1                      |  |
| 153N099W35SWSE   | 0.4                   | 0.0                                   | 0.4                                   | 0.0                                   | 0.4                      |  |
| 153N099W35SWSW   | 2.9                   | 0.4                                   | 2.9                                   | 0.0                                   | 2.5                      |  |
| 153N099W36NESE   | 22.7                  | 13.8                                  | 13.9                                  | 8.9                                   | 0.0                      |  |
| 153N099W36NESW   | 40.1                  | 25.9                                  | 28.4                                  | 11.7                                  | 2.4                      |  |
| 153N099W36NWSE   | 40.0                  | 36.0                                  | 37.5                                  | 2.5                                   | 1.5                      |  |
| 153N099W36NWSW   | 10.1                  | 6.3                                   | 7.8                                   | 2.3                                   | 1.5                      |  |
| 153N099W36SENE   | 18.7                  | 7.2                                   | 12.0                                  | 6.7                                   | 4.8                      |  |
| 153N099W36SESW   | 39.9                  | 8.3                                   | 11.5                                  | 28.4                                  | 3.2                      |  |
| 153N099W36SWNE   | 40.0                  | 6.5                                   | 9.7                                   | 30.3                                  | 3.2                      |  |
| 153N099W36SWSE   | 39.9                  | 0.3                                   | 1.4                                   | 38.5                                  | 1.1                      |  |
| 153N099W36SWSW   | 36.6                  | 17.2                                  | 20.3                                  | 16.3                                  | 3.1                      |  |
| 153N100W05SESW   | 607.5                 | 5.8                                   | 185.8                                 | 421.7                                 | 180.0                    |  |
| 153N100W06NENW   | 51.8                  | 1.3                                   | 43.5                                  | 8.3                                   | 42.1                     |  |
| 153N100W06NESW   | 4.4                   | 0.0                                   | 2.7                                   | 1.7                                   | 2.7                      |  |
| 153N100W06NWNW   | 27.7                  | 0.0                                   | 27.7                                  | 0.0                                   | 27.6                     |  |
| 153N100W06NWSW   | 22.4                  | 0.0                                   | 1.8                                   | 20.7                                  | 1.8                      |  |
| 153N100W06SENW   | 37.4                  | 0.0                                   | 28.4                                  | 9.0                                   | 28.4                     |  |
| 153N100W06SWNW   | 9.2                   | 1.4                                   | 9.2                                   | 0.0                                   | 7.8                      |  |
| 153N100W07NENW   | 49.9                  | 0.0                                   | 8.1                                   | 41.8                                  | 8.1                      |  |
| 153N100W07NESE   | 27.1                  | 0.1                                   | 11.1                                  | 16.1                                  | 11.0                     |  |
| 153N100W07NWNE   | 2.3                   | 0.0                                   | 1.4                                   | 0.8                                   | 1.4                      |  |
| 153N100W07NWSE   | 39.8                  | 0.0                                   | 0.1                                   | 39.7                                  | 0.1                      |  |
| 153N100W07SENE   | 0.4                   | 0.0                                   | 0.4                                   | 0.0                                   | 0.3                      |  |
| 153N100W07SESE   | 39.8                  | 0.0                                   | 0.4                                   | 39.4                                  | 0.4                      |  |
| 153N100W07SWNE   | 26.6                  | 0.0                                   | 3.9                                   | 22.7                                  | 3.9                      |  |
| 153N100W08NENE   | 28.2                  | 2.0                                   | 0.1                                   | 28.1                                  | -1.9                     |  |
| 153N100W08NESW   | 2.8                   | 0.7                                   | 2.8                                   | 0.0                                   | 2.0                      |  |
| 153N100W08NWSW   | 0.1                   | 0.1                                   | 0.1                                   | 0.0                                   | 0.0                      |  |
| 153N100W08SESW   | 39.0                  | 0.1                                   | 26.7                                  | 12.3                                  | 26.7                     |  |
| 153N100W08SWSE   | 30.7                  | 1.1                                   | 5.6                                   | 25.1                                  | 4.5                      |  |
| 153N100W08SWSW   | 41.8                  | 1.1                                   | 21.3                                  | 20.5                                  | 20.2                     |  |
| 153N100W09NESW   | 6.0                   | 0.0                                   | 0.0                                   | 6.0                                   | 0.0                      |  |
| 153N100W09NWSE   | 10.5                  | 1.1                                   | 2.9                                   | 7.6                                   | 1.8                      |  |
| 153N100W09NWSW   | 1.4                   | 0.2                                   | 0.0                                   | 1.4                                   | -0.2                     |  |
| 153N100W09SWNE   | 9.8                   | 0.0                                   | 2.4                                   | 7.4                                   | 2.4                      |  |
| 153N100W09SWSE   | 13.2                  | 2.5                                   | 0.0                                   | 13.2                                  | -2.5                     |  |
| 153N100W09SWSW   | 38.4                  | 0.5                                   | 0.0                                   | 38.3                                  | -0.5                     |  |
| 153N100W16NENW   | 5.0                   | 5.0                                   | 5.0                                   | 0.0                                   | 0.0                      |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |
| 153N100W16NESW   | 39.8                  | 11.0                                  | 6.6                                   | 33.1                                  | -4.4                     |
| 153N100W16NWNE   | 36.4                  | 16.6                                  | 13.1                                  | 23.3                                  | -3.5                     |
| 153N100W16NWSW   | 25.4                  | 24.2                                  | 22.1                                  | 3.3                                   | -2.1                     |
| 153N100W16SENW   | 29.6                  | 25.4                                  | 21.5                                  | 8.1                                   | -3.8                     |
| 153N100W16SWNE   | 38.4                  | 1.6                                   | 0.3                                   | 38.1                                  | -1.3                     |
| 153N100W16SWNW   | 1.9                   | 0.6                                   | 0.6                                   | 1.2                                   | 0.0                      |
| 153N100W16SWSW   | 39.1                  | 7.9                                   | 5.5                                   | 33.6                                  | -2.4                     |
| 153N100W17NESE   | 4.0                   | 0.1                                   | 0.1                                   | 3.8                                   | 0.0                      |
| 153N100W17SESE   | 18.0                  | 13.5                                  | 12.2                                  | 5.8                                   | -1.3                     |
| 153N100W17SESW   | 35.4                  | 0.0                                   | 1.7                                   | 33.7                                  | 1.7                      |
| 153N100W17SWSE   | 6.6                   | 0.0                                   | 0.2                                   | 6.4                                   | 0.2                      |
| 153N100W19NESE   | 9.4                   | 0.0                                   | 2.4                                   | 7.0                                   | 2.4                      |
| 153N100W19SENE   | 33.2                  | 0.0                                   | 2.9                                   | 30.3                                  | 2.9                      |
| 153N100W19SESE   | 9.7                   | 0.0                                   | 1.1                                   | 8.6                                   | 1.1                      |
| 153N100W20NENE   | 39.5                  | 4.5                                   | 2.4                                   | 37.2                                  | -2.2                     |
| 153N100W20NENW   | 5.1                   | 0.0                                   | 1.9                                   | 3.2                                   | 1.9                      |
| 153N100W20NESW   | 35.5                  | 2.8                                   | 0.4                                   | 35.1                                  | -2.4                     |
| 153N100W20NWNE   | 11.2                  | 6.0                                   | 2.7                                   | 8.5                                   | -3.3                     |
| 153N100W20NWNW   | 33.8                  | 0.0                                   | 3.2                                   | 30.6                                  | 3.2                      |
| 153N100W20NWSW   | 5.2                   | 4.1                                   | 3.2                                   | 2.1                                   | -0.9                     |
| 153N100W20SENW   | 6.8                   | 1.8                                   | 0.0                                   | 6.8                                   | -1.8                     |
| 153N100W20SWNE   | 38.2                  | 3.4                                   | 1.1                                   | 37.0                                  | -2.2                     |
| 153N100W20SWNW   | 3.3                   | 0.0                                   | 1.7                                   | 1.6                                   | 1.7                      |
| 153N100W20SWSW   | 30.6                  | 10.9                                  | 8.8                                   | 21.8                                  | -2.1                     |
| 153N100W29NWNW   | 38.2                  | 1.3                                   | 0.5                                   | 37.8                                  | -0.8                     |
| 153N100W29SESW   | 25.4                  | 0.0                                   | 0.0                                   | 25.4                                  | 0.0                      |
| 153N100W29SWSW   | 5.8                   | 0.0                                   | 0.3                                   | 5.4                                   | 0.3                      |
| 153N100W30NENE   | 8.4                   | 1.1                                   | 3.0                                   | 5.4                                   | 1.9                      |
| 153N100W30NESE   | 18.5                  | 4.4                                   | 7.2                                   | 11.3                                  | 2.8                      |
| 153N100W30SENE   | 11.2                  | 4.7                                   | 7.4                                   | 3.7                                   | 2.7                      |
| 153N100W30SESE   | 33.7                  | 0.0                                   | 2.4                                   | 31.3                                  | 2.4                      |
| 153N100W32NENE   | 5.9                   | 5.9                                   | 5.9                                   | 0.0                                   | 0.0                      |
| 153N100W32NENW   | 14.1                  | 2.7                                   | 4.7                                   | 9.5                                   | 2.0                      |
| 153N100W32NWNE   | 0.7                   | 0.7                                   | 0.7                                   | 0.0                                   | 0.0                      |
| 153N100W32NWNW   | 37.5                  | 0.0                                   | 0.7                                   | 36.8                                  | 0.7                      |
| 153N100W32SENE   | 39.8                  | 21.1                                  | 26.0                                  | 13.8                                  | 4.9                      |
| 153N100W32SENW   | 39.6                  | 0.1                                   | 0.9                                   | 38.7                                  | 0.8                      |
| 153N100W32SWNE   | 39.5                  | 12.0                                  | 15.0                                  | 24.5                                  | 2.9                      |
| 153N100W33NENE   | 40.1                  | 21.4                                  | 22.9                                  | 17.2                                  | 1.5                      |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |
| 153N100W33NENW   | 24.1                  | 12.7                                  | 12.6                                  | 11.5                                  | -0.1                     |
| 153N100W33NESE   | 39.9                  | 0.0                                   | 1.4                                   | 38.6                                  | 1.4                      |
| 153N100W33NWNE   | 38.9                  | 15.2                                  | 16.3                                  | 22.6                                  | 1.1                      |
| 153N100W33NWNW   | 13.5                  | 13.1                                  | 11.8                                  | 1.6                                   | -1.3                     |
| 153N100W33SENE   | 39.9                  | 37.0                                  | 39.9                                  | 0.0                                   | 2.8                      |
| 153N100W33SENW   | 40.0                  | 26.8                                  | 32.3                                  | 7.7                                   | 5.5                      |
| 153N100W33SWNE   | 39.7                  | 31.2                                  | 37.2                                  | 2.5                                   | 5.9                      |
| 153N100W33SWNW   | 40.0                  | 25.2                                  | 29.8                                  | 10.2                                  | 4.5                      |
| 153N100W34NENW   | 7.3                   | 5.1                                   | 5.1                                   | 2.2                                   | 0.0                      |
| 153N100W34NESE   | 21.9                  | 0.2                                   | 4.9                                   | 17.1                                  | 4.7                      |
| 153N100W34NWNE   | 34.5                  | 0.8                                   | 1.5                                   | 33.0                                  | 0.7                      |
| 153N100W34NWNW   | 36.1                  | 26.7                                  | 32.3                                  | 3.8                                   | 5.6                      |
| 153N100W34NWSE   | 17.4                  | 0.0                                   | 3.1                                   | 14.3                                  | 3.1                      |
| 153N100W34NWSW   | 40.1                  | 0.0                                   | 0.3                                   | 39.8                                  | 0.3                      |
| 153N100W34SENE   | 40.1                  | 0.0                                   | 0.0                                   | 40.1                                  | 0.0                      |
| 153N100W34SENW   | 30.5                  | 11.1                                  | 18.5                                  | 12.0                                  | 7.4                      |
| 153N100W34SESE   | 7.9                   | 5.7                                   | 6.0                                   | 1.9                                   | 0.3                      |
| 153N100W34SWNE   | 11.2                  | 0.3                                   | 2.8                                   | 8.4                                   | 2.5                      |
| 153N100W34SWNW   | 40.2                  | 33.0                                  | 37.8                                  | 2.5                                   | 4.8                      |
| 153N100W34SWSE   | 38.8                  | 0.6                                   | 3.3                                   | 35.4                                  | 2.7                      |
| 153N100W35NWSW   | 39.7                  | 0.1                                   | 0.7                                   | 39.0                                  | 0.6                      |
| 153N100W35SESW   | 39.1                  | 2.0                                   | 1.8                                   | 37.4                                  | -0.2                     |
| 153N100W35SWSW   | 17.3                  | 5.4                                   | 5.9                                   | 11.4                                  | 0.5                      |
| 153N101W01NENE   | 0.4                   | 0.0                                   | 0.2                                   | 0.2                                   | 0.2                      |
| 153N101W01NESE   | 43.3                  | 0.0                                   | 3.1                                   | 40.2                                  | 3.1                      |
| 153N101W01NWNE   | 33.7                  | 5.7                                   | 2.4                                   | 31.3                                  | -3.3                     |
| 153N101W01NWNW   | 35.9                  | 0.0                                   | 2.2                                   | 33.7                                  | 2.2                      |
| 153N101W01SENE   | 25.8                  | 0.0                                   | 13.9                                  | 12.0                                  | 13.9                     |
| 153N101W02NENE   | 35.3                  | 20.5                                  | 27.6                                  | 7.8                                   | 7.0                      |
| 153N101W02NENW   | 35.1                  | 35.1                                  | 35.1                                  | 0.0                                   | 0.0                      |
| 153N101W02NWNE   | 35.3                  | 35.0                                  | 35.3                                  | 0.0                                   | 0.3                      |
| 153N101W02NWNW   | 18.8                  | 14.3                                  | 18.8                                  | 0.0                                   | 4.4                      |
| 153N101W02NWSW   | 40.0                  | 0.0                                   | 0.1                                   | 40.0                                  | 0.1                      |
| 153N101W02SENE   | 40.1                  | 0.0                                   | 0.2                                   | 39.9                                  | 0.2                      |
| 153N101W02SENW   | 40.0                  | 7.8                                   | 4.1                                   | 35.8                                  | -3.6                     |
| 153N101W02SWNE   | 40.0                  | 3.0                                   | 6.0                                   | 34.1                                  | 3.0                      |
| 153N101W02SWNW   | 39.9                  | 0.5                                   | 11.0                                  | 28.9                                  | 10.4                     |
| 153N101W03NENE   | 305.6                 | 24.6                                  | 24.1                                  | 281.5                                 | -0.5                     |
| 153N101W03NESE   | 40.1                  | 0.0                                   | 0.4                                   | 39.6                                  | 0.4                      |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |
| 153N101W03SENE   | 30.5                  | 0.0                                   | 3.8                                   | 26.6                                  | 3.8                      |
| 153N101W05NWNW   | 27.0                  | 0.3                                   | 0.0                                   | 27.0                                  | -0.3                     |
| 153N101W06NENE   | 5.7                   | 1.4                                   | 0.0                                   | 5.7                                   | -1.4                     |
| 153N101W06NESW   | 3.8                   | 0.0                                   | 0.0                                   | 3.8                                   | 0.0                      |
| 153N101W06NWNE   | 18.8                  | 0.2                                   | 0.8                                   | 18.0                                  | 0.6                      |
| 153N101W06NWSW   | 33.3                  | 1.3                                   | 3.9                                   | 29.4                                  | 2.6                      |
| 153N101W06SENE   | 37.1                  | 0.7                                   | 0.0                                   | 37.1                                  | -0.7                     |
| 153N101W06SENW   | 30.3                  | 0.0                                   | 0.7                                   | 29.5                                  | 0.7                      |
| 153N101W06SWNE   | 5.3                   | 0.0                                   | 0.3                                   | 5.0                                   | 0.3                      |
| 153N101W06SWSW   | 3.8                   | 0.9                                   | 2.9                                   | 0.9                                   | 2.1                      |
| 154N094W27NESW   | 30.4                  | 0.0                                   | 1.0                                   | 29.4                                  | 1.0                      |
| 154N094W27NWSE   | 39.9                  | 0.0                                   | 0.1                                   | 39.8                                  | 0.1                      |
| 154N094W27NWSW   | 13.9                  | 0.0                                   | 0.7                                   | 13.2                                  | 0.7                      |
| 154N094W27SESE   | 31.3                  | 0.0                                   | 0.8                                   | 30.5                                  | 0.8                      |
| 154N094W27SWSE   | 9.0                   | 0.0                                   | 1.2                                   | 7.8                                   | 1.2                      |
| 154N094W28SWNW   | 515.8                 | 0.2                                   | 130.7                                 | 385.1                                 | 130.4                    |
| 154N094W28SWSE   | 3.8                   | 1.4                                   | 1.3                                   | 2.5                                   | -0.1                     |
| 154N094W30NWSE   | 34.3                  | 0.0                                   | 0.1                                   | 34.3                                  | 0.1                      |
| 154N094W31NESE   | 39.9                  | 0.0                                   | 3.9                                   | 36.0                                  | 3.9                      |
| 154N094W31NWNW   | 3.7                   | 0.0                                   | 3.1                                   | 0.7                                   | 3.1                      |
| 154N094W31SENE   | 7.4                   | 0.0                                   | 6.7                                   | 0.7                                   | 6.7                      |
| 154N094W31SENW   | 30.7                  | 0.0                                   | 7.5                                   | 23.2                                  | 7.5                      |
| 154N094W31SWNE   | 23.0                  | 0.0                                   | 10.4                                  | 12.6                                  | 10.4                     |
| 154N094W31SWNW   | 37.9                  | 0.0                                   | 3.9                                   | 34.0                                  | 3.9                      |
| 154N094W32NESE   | 39.8                  | 0.6                                   | 1.9                                   | 37.9                                  | 1.3                      |
| 154N094W32NESW   | 25.4                  | 1.2                                   | 3.5                                   | 21.9                                  | 2.3                      |
| 154N094W32NWSE   | 31.1                  | 2.5                                   | 3.8                                   | 27.3                                  | 1.3                      |
| 154N094W32NWSW   | 31.1                  | 0.0                                   | 6.5                                   | 24.6                                  | 6.5                      |
| 154N094W32SENE   | 6.3                   | 1.8                                   | 5.4                                   | 0.9                                   | 3.6                      |
| 154N094W33NENE   | 206.2                 | 5.6                                   | 102.5                                 | 103.7                                 | 96.9                     |
| 154N094W33NENW   | 16.6                  | 2.0                                   | 2.4                                   | 14.2                                  | 0.4                      |
| 154N094W33NESE   | 16.8                  | 0.0                                   | 12.4                                  | 4.4                                   | 12.4                     |
| 154N094W33NWNE   | 36.3                  | 1.1                                   | 0.6                                   | 35.7                                  | -0.5                     |
| 154N094W33NWNW   | 0.4                   | 0.4                                   | 0.4                                   | 0.0                                   | 0.1                      |
| 154N094W33NWSE   | 40.1                  | 0.0                                   | 1.6                                   | 38.5                                  | 1.6                      |
| 154N094W33SENE   | 16.4                  | 0.0                                   | 1.3                                   | 15.0                                  | 1.3                      |
| 154N094W33SENW   | 40.0                  | 0.0                                   | 0.7                                   | 39.3                                  | 0.7                      |
| 154N094W33SWNW   | 29.5                  | 1.7                                   | 13.4                                  | 16.1                                  | 11.7                     |
| 154N094W33SWSE   | 33.8                  | 0.0                                   | 8.3                                   | 25.5                                  | 8.3                      |

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|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |
| 154N094W34NENE   | 0.9                   | 0.0                                   | 0.3                                   | 0.6                                   | 0.3                      |
| 154N094W34SENE   | 622.6                 | 16.9                                  | 622.6                                 | 0.0                                   | 605.7                    |
| 154N094W35NESW   | 29.4                  | 0.0                                   | 3.9                                   | 25.5                                  | 3.9                      |
| 154N094W35NWNW   | 26.8                  | 0.0                                   | 1.3                                   | 25.5                                  | 1.3                      |
| 154N094W35SENW   | 39.5                  | 0.0                                   | 1.4                                   | 38.0                                  | 1.4                      |
| 154N094W35SESW   | 22.2                  | 0.0                                   | 0.2                                   | 22.0                                  | 0.2                      |
| 154N094W35SWNW   | 4.5                   | 0.0                                   | 1.1                                   | 3.4                                   | 1.1                      |
| 154N095W25NESE   | 11.0                  | 0.2                                   | 0.2                                   | 10.8                                  | 0.0                      |
| 154N095W25SESW   | 33.3                  | 4.3                                   | 31.0                                  | 2.3                                   | 26.7                     |
| 154N095W25SWNW   | 64.5                  | 1.4                                   | 11.5                                  | 53.1                                  | 10.1                     |
| 154N095W25SWSE   | 0.5                   | 0.1                                   | 0.5                                   | 0.0                                   | 0.4                      |
| 154N095W25SWSW   | 62.2                  | 1.6                                   | 50.0                                  | 12.2                                  | 48.4                     |
| 154N095W26NENE   | 39.9                  | 0.0                                   | 0.0                                   | 39.9                                  | 0.0                      |
| 154N095W26NESE   | 54.5                  | 1.4                                   | 54.0                                  | 0.6                                   | 52.6                     |
| 154N095W26NESW   | 151.3                 | 7.6                                   | 108.3                                 | 43.0                                  | 100.8                    |
| 154N095W26NWNE   | 28.7                  | 0.0                                   | 0.0                                   | 28.7                                  | 0.0                      |
| 154N095W26NWSE   | 19.7                  | 0.0                                   | 5.9                                   | 13.8                                  | 5.9                      |
| 154N095W26SENE   | 5.7                   | 0.0                                   | 0.0                                   | 5.7                                   | 0.0                      |
| 154N095W26SESE   | 34.4                  | 0.0                                   | 1.6                                   | 32.8                                  | 1.6                      |
| 154N095W27NESW   | 4.3                   | 0.1                                   | 1.7                                   | 2.6                                   | 1.6                      |
| 154N095W27SENE   | 52.8                  | 5.3                                   | 22.6                                  | 30.2                                  | 17.2                     |
| 154N095W27SESW   | 38.2                  | 0.0                                   | 2.6                                   | 35.6                                  | 2.6                      |
| 154N095W27SWNW   | 63.6                  | 0.0                                   | 4.8                                   | 58.8                                  | 4.8                      |
| 154N095W27SWSW   | 13.6                  | 0.0                                   | 7.6                                   | 5.9                                   | 7.6                      |
| 154N095W28NESW   | 146.0                 | 14.7                                  | 15.9                                  | 130.1                                 | 1.2                      |
| 154N095W28SENE   | 102.6                 | 0.9                                   | 18.9                                  | 83.6                                  | 18.0                     |
| 154N095W28SWNE   | 124.3                 | 5.5                                   | 22.9                                  | 101.4                                 | 17.4                     |
| 154N095W29NESE   | 39.2                  | 0.7                                   | 0.2                                   | 38.9                                  | -0.5                     |
| 154N095W29NWNW   | 50.1                  | 1.0                                   | 0.0                                   | 50.1                                  | -1.0                     |
| 154N095W29SENW   | 32.6                  | 0.4                                   | 0.0                                   | 32.6                                  | -0.4                     |
| 154N095W29SESE   | 23.7                  | 4.2                                   | 4.7                                   | 19.0                                  | 0.5                      |
| 154N095W29SWNE   | 55.2                  | 1.9                                   | 0.0                                   | 55.2                                  | -1.9                     |
| 154N095W30NENE   | 34.0                  | 1.4                                   | 0.0                                   | 34.0                                  | -1.4                     |
| 154N095W30NENW   | 13.3                  | 4.0                                   | 0.0                                   | 13.3                                  | -4.0                     |
| 154N095W30NWNE   | 18.5                  | 2.2                                   | 0.0                                   | 18.5                                  | -2.2                     |
| 154N095W30NWNW   | 9.2                   | 5.8                                   | 3.0                                   | 6.3                                   | -2.8                     |
| 154N095W30SENE   | 0.6                   | 0.4                                   | 0.0                                   | 0.6                                   | -0.4                     |
| 154N095W31NENE   | 584.4                 | 0.0                                   | 10.3                                  | 574.1                                 | 10.3                     |
| 154N095W32NESE   | 73.4                  | 0.0                                   | 3.0                                   | 70.4                                  | 3.0                      |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 154N095W32NESW   | 40.4                  | 0.0                                   | 0.4                                   | 39.9                                  | 0.4                      |  |
| 154N095W32SENW   | 45.4                  | 0.0                                   | 6.0                                   | 39.4                                  | 6.0                      |  |
| 154N095W32SWNE   | 37.5                  | 0.0                                   | 2.6                                   | 34.8                                  | 2.6                      |  |
| 154N095W33NENE   | 22.9                  | 0.0                                   | 5.1                                   | 17.8                                  | 5.1                      |  |
| 154N095W33NESW   | 72.2                  | 0.0                                   | 2.7                                   | 69.5                                  | 2.7                      |  |
| 154N095W33NWNE   | 6.1                   | 0.0                                   | 3.4                                   | 2.7                                   | 3.4                      |  |
| 154N095W33SWNE   | 39.7                  | 0.0                                   | 1.1                                   | 38.6                                  | 1.1                      |  |
| 154N095W33SWNW   | 31.6                  | 0.0                                   | 2.3                                   | 29.3                                  | 2.3                      |  |
| 154N095W34NWNW   | 39.7                  | 0.0                                   | 4.5                                   | 35.2                                  | 4.5                      |  |
| 154N095W36NENE   | 15.1                  | 0.0                                   | 4.5                                   | 10.6                                  | 4.5                      |  |
| 154N095W36NENW   | 40.0                  | 0.0                                   | 0.5                                   | 39.5                                  | 0.5                      |  |
| 154N095W36NWNE   | 33.3                  | 1.2                                   | 6.8                                   | 26.6                                  | 5.6                      |  |
| 154N096W19NESW   | 40.0                  | 0.0                                   | 0.9                                   | 39.1                                  | 0.9                      |  |
| 154N096W19NWSW   | 40.0                  | 13.9                                  | 24.9                                  | 15.1                                  | 10.9                     |  |
| 154N096W19SESW   | 40.0                  | 2.0                                   | 14.9                                  | 25.1                                  | 12.9                     |  |
| 154N096W19SWSW   | 40.0                  | 38.5                                  | 40.0                                  | 0.0                                   | 1.4                      |  |
| 154N096W21SESW   | 39.9                  | 6.1                                   | 6.0                                   | 33.9                                  | -0.1                     |  |
| 154N096W21SWSE   | 40.0                  | 2.6                                   | 2.6                                   | 37.4                                  | 0.0                      |  |
| 154N096W21SWSW   | 40.0                  | 0.0                                   | 0.0                                   | 40.0                                  | 0.0                      |  |
| 154N096W24SESW   | 39.8                  | 0.4                                   | 1.0                                   | 38.9                                  | 0.5                      |  |
| 154N096W24SWSE   | 39.9                  | 0.9                                   | 1.3                                   | 38.6                                  | 0.4                      |  |
| 154N096W25NENE   | 32.3                  | 27.8                                  | 28.4                                  | 3.9                                   | 0.5                      |  |
| 154N096W25NENW   | 15.6                  | 13.7                                  | 14.8                                  | 0.8                                   | 1.1                      |  |
| 154N096W25NWNE   | 21.4                  | 20.8                                  | 21.2                                  | 0.3                                   | 0.4                      |  |
| 154N096W25NWNW   | 14.8                  | 11.1                                  | 11.3                                  | 3.5                                   | 0.2                      |  |
| 154N096W26NENW   | 13.7                  | 0.0                                   | 1.6                                   | 12.1                                  | 1.6                      |  |
| 154N096W26NWNE   | 36.3                  | 0.1                                   | 24.3                                  | 12.0                                  | 24.2                     |  |
| 154N096W26NWNW   | 14.9                  | 0.0                                   | 2.3                                   | 12.6                                  | 2.3                      |  |
| 154N096W26NWSW   | 39.0                  | 0.6                                   | 1.0                                   | 38.0                                  | 0.3                      |  |
| 154N096W26SENW   | 18.2                  | 0.4                                   | 0.4                                   | 17.8                                  | 0.0                      |  |
| 154N096W26SWNW   | 6.4                   | 1.1                                   | 1.6                                   | 4.9                                   | 0.5                      |  |
| 154N096W27NENE   | 28.9                  | 0.0                                   | 8.7                                   | 20.2                                  | 8.7                      |  |
| 154N096W27NENW   | 39.7                  | 0.2                                   | 0.0                                   | 39.7                                  | -0.2                     |  |
| 154N096W27NESE   | 15.5                  | 2.4                                   | 5.1                                   | 10.4                                  | 2.7                      |  |
| 154N096W27NWNE   | 32.4                  | 0.1                                   | 0.0                                   | 32.4                                  | -0.1                     |  |
| 154N096W27SENW   | 4.4                   | 0.2                                   | 0.0                                   | 4.4                                   | -0.2                     |  |
| 154N096W27SESE   | 39.8                  | 0.3                                   | 0.7                                   | 39.1                                  | 0.4                      |  |
| 154N096W27SESW   | 21.9                  | 1.9                                   | 4.5                                   | 17.4                                  | 2.6                      |  |
| 154N096W27SWSE   | 26.6                  | 2.1                                   | 4.2                                   | 22.4                                  | 2.1                      |  |

| Table 2a. OHWM Delineati      | Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                                       |                                       |                                       |                          |  |  |
|-------------------------------|--|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|--|
| Quarter Quarter Section<br>ID | Total Area<br>(acres)  | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |  |
| 154N096W27SWSW                | 19.8   | 1.9                                   | 3.1                                   | 16.7                                  | 1.2                      |  |  |
| 154N096W28NENE                | 33.8   | 0.0                                   | 0.9                                   | 32.9                                  | 0.9                      |  |  |
| 154N096W28NESW                | 9.8  | 0.0                                   | 8.2                                   | 1.6                                   | 8.1                      |  |  |
| 154N096W28NWNE                | 8.7  | 0.0                                   | 1.1                                   | 7.6                                   | 1.1                      |  |  |
| 154N096W28NWSW                | 4.3  | 0.0                                   | 1.1                                   | 3.2                                   | 1.1                      |  |  |
| 154N096W28SESE                | 20.0   | 2.3                                   | 3.4                                   | 16.6                                  | 1.2                      |  |  |
| 154N096W28SESW                | 38.0   | 0.0                                   | 2.9                                   | 35.1                                  | 2.9                      |  |  |
| 154N096W28SWSE                | 28.8   | 0.1                                   | 3.8                                   | 25.1                                  | 3.7                      |  |  |
| 154N096W28SWSW                | 39.9   | 0.0                                   | 0.0                                   | 39.9                                  | 0.0                      |  |  |
| 154N096W29NENE                | 31.2   | 0.1                                   | 0.1                                   | 31.0                                  | 0.0                      |  |  |
| 154N096W29NESE                | 29.5   | 0.0                                   | 7.7                                   | 21.8                                  | 7.7                      |  |  |
| 154N096W29NESW                | 23.4   | 0.2                                   | 3.3                                   | 20.1                                  | 3.1                      |  |  |
| 154N096W29NWNE                | 44.4   | 0.1                                   | 0.7                                   | 43.7                                  | 0.6                      |  |  |
| 154N096W29NWSW                | 24.2   | 0.0                                   | 5.0                                   | 19.2                                  | 5.0                      |  |  |
| 154N096W29SENW                | 14.6   | 0.4                                   | 2.9                                   | 11.7                                  | 2.5                      |  |  |
| 154N096W29SWNW                | 18.9   | 0.2                                   | 1.5                                   | 17.4                                  | 1.3                      |  |  |
| 154N096W30NENW                | 33.9   | 0.2                                   | 12.6                                  | 21.4                                  | 12.4                     |  |  |
| 154N096W30NESE                | 23.7   | 0.2                                   | 6.7                                   | 17.1                                  | 6.5                      |  |  |
| 154N096W30NWSE                | 6.4  | 0.0                                   | 1.9                                   | 4.5                                   | 1.9                      |  |  |
| 154N096W30SENE                | 26.0   | 0.1                                   | 1.5                                   | 24.5                                  | 1.4                      |  |  |
| 154N096W30SENW                | 31.6   | 0.4                                   | 17.1                                  | 14.5                                  | 16.7                     |  |  |
| 154N096W30SESW                | 12.6   | 0.7                                   | 2.9                                   | 9.7                                   | 2.1                      |  |  |
| 154N096W30SWNE                | 92.2   | 4.2                                   | 63.9                                  | 28.3                                  | 59.6                     |  |  |
| 154N096W30SWSE                | 38.8   | 0.0                                   | 2.0                                   | 36.8                                  | 2.0                      |  |  |
| 154N096W30SWSW                | 11.2   | 0.2                                   | 11.2                                  | 0.0                                   | 11.0                     |  |  |
| 154N096W31NENW                | 39.9   | 0.0                                   | 0.1                                   | 39.8                                  | 0.1                      |  |  |
| 154N096W31NWNW                | 40.1   | 0.0                                   | 11.0                                  | 29.1                                  | 11.0                     |  |  |
| 154N097W22SWNE                | 494.9  | 0.0                                   | 13.7                                  | 481.2                                 | 13.7                     |  |  |
| 154N097W23NENE                | 41.8   | 0.1                                   | 1.8                                   | 40.0                                  | 1.7                      |  |  |
| 154N097W23NENW                | 182.6  | 0.0                                   | 20.7                                  | 161.9                                 | 20.7                     |  |  |
| 154N097W23NWNE                | 51.0   | 0.0                                   | 5.2                                   | 45.7                                  | 5.2                      |  |  |
| 154N097W23SENE                | 34.8   | 0.0                                   | 28.6                                  | 6.1                                   | 28.6                     |  |  |
| 154N097W23SESW                | 22.9   | 0.4                                   | 2.4                                   | 20.6                                  | 1.9                      |  |  |
| 154N097W23SWNE                | 33.2   | 0.0                                   | 20.6                                  | 12.6                                  | 20.6                     |  |  |
| 154N097W23SWSE                | 68.9   | 0.1                                   | 8.3                                   | 60.6                                  | 8.2                      |  |  |
| 154N097W23SWSW                | 4.3  | 0.5                                   | 0.8                                   | 3.5                                   | 0.3                      |  |  |
| 154N097W24NESE                | 2.7  | 0.6                                   | 2.2                                   | 0.5                                   | 1.6                      |  |  |
| 154N097W24SENE                | 38.8   | 0.1                                   | 2.9                                   | 35.9                                  | 2.8                      |  |  |
| 154N097W24SENW                | 27.1   | 0.0                                   | 8.1                                   | 18.9                                  | 8.1                      |  |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 154N097W24SWNE   | 32.3                  | 0.0                                   | 5.6                                   | 26.7                                  | 5.6                      |  |
| 154N097W24SWNW   | 25.7                  | 0.0                                   | 19.0                                  | 6.6                                   | 19.0                     |  |
| 154N097W25NESW   | 68.2                  | 0.2                                   | 68.2                                  | 0.0                                   | 68.1                     |  |
| 154N097W25NWNW   | 93.4                  | 1.2                                   | 77.0                                  | 16.4                                  | 75.7                     |  |
| 154N097W25NWSE   | 87.7                  | 0.9                                   | 87.7                                  | 0.0                                   | 86.8                     |  |
| 154N097W25NWSW   | 40.1                  | 0.0                                   | 39.5                                  | 0.6                                   | 39.5                     |  |
| 154N097W25SENW   | 12.3                  | 0.0                                   | 12.3                                  | 0.0                                   | 12.3                     |  |
| 154N097W25SESE   | 61.7                  | 0.4                                   | 61.7                                  | 0.0                                   | 61.2                     |  |
| 154N097W25SESW   | 39.8                  | 0.0                                   | 39.8                                  | 0.0                                   | 39.8                     |  |
| 154N097W25SWNW   | 163.3                 | 0.6                                   | 146.1                                 | 17.1                                  | 145.6                    |  |
| 154N097W25SWSE   | 39.8                  | 0.0                                   | 39.8                                  | 0.0                                   | 39.8                     |  |
| 154N097W25SWSW   | 39.9                  | 0.0                                   | 31.7                                  | 8.2                                   | 31.7                     |  |
| 154N097W26NENE   | 63.5                  | 0.4                                   | 17.5                                  | 46.0                                  | 17.0                     |  |
| 154N097W26NESE   | 39.9                  | 0.0                                   | 2.7                                   | 37.2                                  | 2.7                      |  |
| 154N097W26NWNW   | 37.5                  | 0.4                                   | 0.6                                   | 36.9                                  | 0.2                      |  |
| 154N097W26SESE   | 39.9                  | 0.0                                   | 0.2                                   | 39.8                                  | 0.2                      |  |
| 154N097W27NENE   | 21.1                  | 0.0                                   | 0.5                                   | 20.6                                  | 0.5                      |  |
| 154N097W27NESW   | 39.9                  | 0.0                                   | 3.5                                   | 36.4                                  | 3.5                      |  |
| 154N097W27NWNE   | 3.5                   | 0.0                                   | 1.3                                   | 2.2                                   | 1.3                      |  |
| 154N097W27NWSW   | 39.9                  | 0.0                                   | 24.6                                  | 15.3                                  | 24.6                     |  |
| 154N097W27SENW   | 19.8                  | 0.0                                   | 13.3                                  | 6.5                                   | 13.3                     |  |
| 154N097W27SWNE   | 36.8                  | 0.0                                   | 2.6                                   | 34.2                                  | 2.6                      |  |
| 154N097W27SWNW   | 11.7                  | 0.1                                   | 11.7                                  | 0.0                                   | 11.6                     |  |
| 154N097W28NENW   | 20.0                  | 0.0                                   | 1.1                                   | 18.9                                  | 1.1                      |  |
| 154N097W28NESE   | 40.0                  | 0.0                                   | 39.6                                  | 0.4                                   | 39.6                     |  |
| 154N097W28NESW   | 60.3                  | 0.0                                   | 51.9                                  | 8.4                                   | 51.9                     |  |
| 154N097W28NWNE   | 9.6                   | 0.0                                   | 0.1                                   | 9.5                                   | 0.1                      |  |
| 154N097W28NWNW   | 22.6                  | 0.0                                   | 2.6                                   | 20.0                                  | 2.6                      |  |
| 154N097W28NWSE   | 49.3                  | 0.0                                   | 40.4                                  | 8.9                                   | 40.3                     |  |
| 154N097W28NWSW   | 0.0                   | 0.0                                   | 0.0                                   | 0.0                                   | 0.0                      |  |
| 154N097W28SENE   | 15.9                  | 0.5                                   | 15.9                                  | 0.0                                   | 15.4                     |  |
| 154N097W28SESE   | 39.9                  | 0.0                                   | 1.0                                   | 38.9                                  | 1.0                      |  |
| 154N097W28SWNE   | 12.1                  | 0.3                                   | 12.1                                  | 0.0                                   | 11.9                     |  |
| 154N097W28SWSW   | 37.5                  | 0.0                                   | 1.7                                   | 35.7                                  | 1.7                      |  |
| 154N097W29NENE   | 40.0                  | 12.0                                  | 14.8                                  | 25.2                                  | 2.8                      |  |
| 154N097W29NENW   | 40.0                  | 0.3                                   | 0.4                                   | 39.6                                  | 0.1                      |  |
| 154N097W29NWNE   | 40.0                  | 6.5                                   | 8.9                                   | 31.1                                  | 2.4                      |  |
| 154N097W29NWNW   | 40.0                  | 0.0                                   | 0.4                                   | 39.6                                  | 0.4                      |  |
| 154N097W29NWSW   | 1.1                   | 0.0                                   | 1.1                                   | 0.0                                   | 1.1                      |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 154N097W29SENE   | 27.4                  | 27.4                                  | 27.4                                  | 0.0                                   | 0.0                      |  |
| 154N097W29SENW   | 35.8                  | 32.9                                  | 31.9                                  | 3.9                                   | -1.0                     |  |
| 154N097W29SWNE   | 30.9                  | 30.9                                  | 30.9                                  | 0.0                                   | 0.0                      |  |
| 154N097W29SWNW   | 39.7                  | 22.8                                  | 34.7                                  | 5.0                                   | 11.9                     |  |
| 154N097W30NENE   | 39.9                  | 5.2                                   | 6.7                                   | 33.2                                  | 1.5                      |  |
| 154N097W30NESE   | 5.6                   | 0.0                                   | 5.6                                   | 0.0                                   | 5.6                      |  |
| 154N097W30NESW   | 18.7                  | 11.7                                  | 18.7                                  | 0.0                                   | 7.0                      |  |
| 154N097W30NWNE   | 40.0                  | 1.7                                   | 1.5                                   | 38.4                                  | -0.2                     |  |
| 154N097W30NWSE   | 10.6                  | 0.0                                   | 10.6                                  | 0.0                                   | 10.6                     |  |
| 154N097W30NWSW   | 30.5                  | 20.2                                  | 19.2                                  | 11.3                                  | -1.0                     |  |
| 154N097W30SENE   | 39.9                  | 24.2                                  | 39.9                                  | 0.0                                   | 15.8                     |  |
| 154N097W30SENW   | 39.9                  | 23.5                                  | 19.9                                  | 20.0                                  | -3.6                     |  |
| 154N097W30SESE   | 17.4                  | 0.0                                   | 0.1                                   | 17.3                                  | 0.1                      |  |
| 154N097W30SESW   | 0.2                   | 0.2                                   | 0.2                                   | 0.0                                   | 0.0                      |  |
| 154N097W30SWNE   | 40.0                  | 32.7                                  | 37.7                                  | 2.2                                   | 5.0                      |  |
| 154N097W30SWNW   | 37.8                  | 1.0                                   | 0.4                                   | 37.3                                  | -0.6                     |  |
| 154N097W30SWSE   | 8.3                   | 1.1                                   | 3.9                                   | 4.3                                   | 2.8                      |  |
| 154N097W31NENW   | 34.4                  | 7.6                                   | 12.7                                  | 21.7                                  | 5.1                      |  |
| 154N097W31NWNE   | 40.0                  | 0.1                                   | 0.8                                   | 39.2                                  | 0.7                      |  |
| 154N097W31NWNW   | 9.4                   | 4.7                                   | 7.6                                   | 1.8                                   | 2.9                      |  |
| 154N097W31SWNW   | 38.0                  | 2.0                                   | 4.6                                   | 33.4                                  | 2.6                      |  |
| 154N097W36NENE   | 39.9                  | 0.0                                   | 28.0                                  | 11.9                                  | 28.0                     |  |
| 154N097W36NENW   | 39.9                  | 0.0                                   | 10.5                                  | 29.4                                  | 10.5                     |  |
| 154N097W36NWNE   | 39.9                  | 0.0                                   | 35.0                                  | 4.9                                   | 35.0                     |  |
| 154N097W36NWNW   | 39.9                  | 0.0                                   | 0.6                                   | 39.3                                  | 0.6                      |  |
| 154N098W25NESE   | 40.0                  | 3.9                                   | 2.5                                   | 37.4                                  | -1.4                     |  |
| 154N098W25SESE   | 12.9                  | 8.1                                   | 8.3                                   | 4.6                                   | 0.3                      |  |
| 154N098W25SWSE   | 37.4                  | 0.8                                   | 1.1                                   | 36.4                                  | 0.3                      |  |
| 154N098W35NESE   | 39.8                  | 0.2                                   | 0.3                                   | 39.5                                  | 0.1                      |  |
| 154N098W35SESE   | 27.3                  | 3.5                                   | 4.2                                   | 23.2                                  | 0.7                      |  |
| 154N098W36NENW   | 36.6                  | 6.1                                   | 6.7                                   | 29.9                                  | 0.7                      |  |
| 154N098W36NESE   | 58.2                  | 6.4                                   | 11.3                                  | 47.0                                  | 4.9                      |  |
| 154N098W36NESW   | 0.1                   | 0.1                                   | 0.1                                   | 0.0                                   | 0.0                      |  |
| 154N098W36NWNE   | 7.2                   | 1.6                                   | 4.3                                   | 2.9                                   | 2.7                      |  |
| 154N098W36NWSE   | 24.8                  | 8.4                                   | 13.0                                  | 11.8                                  | 4.6                      |  |
| 154N098W36NWSW   | 12.9                  | 4.7                                   | 4.7                                   | 8.2                                   | 0.0                      |  |
| 154N098W36SENW   | 6.6                   | 4.2                                   | 4.2                                   | 2.5                                   | 0.0                      |  |
| 154N098W36SESW   | 14.5                  | 0.8                                   | 5.8                                   | 8.8                                   | 5.0                      |  |
| 154N098W36SWNW   | 36.5                  | 2.8                                   | 2.8                                   | 33.8                                  | 0.0                      |  |

| Table 2a. OHWM Delineati      | Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                                       |                                       |                                       |                          |  |  |
|-------------------------------|--|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|--|
| Quarter Quarter Section<br>ID | Total Area<br>(acres)  | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |  |
| 154N098W36SWSE                | 39.9   | 0.1                                   | 1.3                                   | 38.6                                  | 1.2                      |  |  |
| 154N100W30NESE                | 40.1   | 3.5                                   | 5.6                                   | 34.4                                  | 2.2                      |  |  |
| 154N100W30NESW                | 40.0   | 40.0                                  | 40.0                                  | 0.0                                   | 0.0                      |  |  |
| 154N100W30NWNW                | 37.8   | 0.0                                   | 0.1                                   | 37.7                                  | 0.1                      |  |  |
| 154N100W30NWSE                | 40.0   | 34.6                                  | 38.2                                  | 1.9                                   | 3.5                      |  |  |
| 154N100W30NWSW                | 38.0   | 25.7                                  | 38.0                                  | 0.0                                   | 12.4                     |  |  |
| 154N100W30SENW                | 40.1   | 25.6                                  | 31.6                                  | 8.4                                   | 6.0                      |  |  |
| 154N100W30SESE                | 40.0   | 16.7                                  | 18.0                                  | 22.0                                  | 1.3                      |  |  |
| 154N100W30SESW                | 40.0   | 38.6                                  | 40.0                                  | 0.0                                   | 1.3                      |  |  |
| 154N100W30SWNE                | 40.1   | 5.4                                   | 9.8                                   | 30.3                                  | 4.4                      |  |  |
| 154N100W30SWNW                | 38.0   | 27.4                                  | 36.8                                  | 1.1                                   | 9.5                      |  |  |
| 154N100W30SWSE                | 40.0   | 40.0                                  | 40.0                                  | 0.0                                   | 0.0                      |  |  |
| 154N100W30SWSW                | 38.2   | 1.1                                   | 38.2                                  | 0.0                                   | 37.1                     |  |  |
| 154N100W31NENE                | 29.5   | 1.0                                   | 0.0                                   | 29.5                                  | -1.0                     |  |  |
| 154N100W31NESW                | 34.1   | 0.2                                   | 18.2                                  | 15.9                                  | 18.0                     |  |  |
| 154N100W31NWNW                | 45.8   | 3.8                                   | 45.8                                  | 0.0                                   | 42.0                     |  |  |
| 154N100W31NWSW                | 11.2   | 0.0                                   | 11.2                                  | 0.0                                   | 11.2                     |  |  |
| 154N100W31SENE                | 40.0   | 0.0                                   | 0.0                                   | 40.0                                  | 0.0                      |  |  |
| 154N100W31SESW                | 52.4   | 0.0                                   | 42.6                                  | 9.7                                   | 42.6                     |  |  |
| 154N100W31SWNE                | 18.1   | 0.7                                   | 0.0                                   | 18.1                                  | -0.7                     |  |  |
| 154N100W31SWSW                | 30.7   | 0.0                                   | 30.7                                  | 0.0                                   | 30.7                     |  |  |
| 154N101W25NENE                | 39.9   | 0.0                                   | 0.4                                   | 39.5                                  | 0.4                      |  |  |
| 154N101W25NENW                | 8.0  | 0.0                                   | 0.2                                   | 7.8                                   | 0.2                      |  |  |
| 154N101W25NWNE                | 31.7   | 0.0                                   | 3.6                                   | 28.1                                  | 3.6                      |  |  |
| 154N101W25SENE                | 15.6   | 1.0                                   | 11.6                                  | 4.0                                   | 10.6                     |  |  |
| 154N101W25SWNE                | 0.1  | 0.0                                   | 0.1                                   | 0.0                                   | 0.1                      |  |  |
| 154N101W31NESE                | 40.1   | 0.0                                   | 0.7                                   | 39.4                                  | 0.7                      |  |  |
| 154N101W31SESE                | 22.3   | 0.7                                   | 9.2                                   | 13.1                                  | 8.6                      |  |  |
| 154N101W31SWSE                | 40.0   | 0.0                                   | 0.3                                   | 39.7                                  | 0.3                      |  |  |
| 154N101W32NENE                | 40.1   | 0.1                                   | 0.0                                   | 40.1                                  | -0.1                     |  |  |
| 154N101W32NESW                | 10.4   | 2.3                                   | 8.6                                   | 1.8                                   | 6.3                      |  |  |
| 154N101W32NWSE                | 3.0  | 1.1                                   | 3.0                                   | 0.0                                   | 1.9                      |  |  |
| 154N101W32NWSW                | 29.9   | 4.6                                   | 10.1                                  | 19.8                                  | 5.5                      |  |  |
| 154N101W32SENE                | 19.7   | 3.9                                   | 5.5                                   | 14.2                                  | 1.6                      |  |  |
| 154N101W32SENW                | 40.0   | 0.0                                   | 0.8                                   | 39.2                                  | 0.8                      |  |  |
| 154N101W32SWNE                | 39.3   | 1.9                                   | 5.2                                   | 34.1                                  | 3.4                      |  |  |
| 154N101W32SWSW                | 0.9  | 0.9                                   | 0.9                                   | 0.0                                   | 0.0                      |  |  |
| 154N101W33NENE                | 4.0  | 0.0                                   | 1.7                                   | 2.3                                   | 1.7                      |  |  |
| 154N101W33NENW                | 13.1   | 0.0                                   | 6.3                                   | 6.8                                   | 6.3                      |  |  |

| Table 2a. OHWM Delineation Results (Downstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |  |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|
| Quarter Quarter Section<br>ID  | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |
| 154N101W33NWNE   | 7.4                   | 0.0                                   | 1.3                                   | 6.2                                   | 1.3                      |  |
| 154N101W33NWNW   | 24.4                  | 0.2                                   | 3.3                                   | 21.1                                  | 3.1                      |  |
| 154N101W33SESW   | 492.7                 | 0.3                                   | 242.1                                 | 250.6                                 | 241.8                    |  |
| 154N101W34NENW   | 23.8                  | 0.0                                   | 6.9                                   | 16.8                                  | 6.9                      |  |
| 154N101W34NESE   | 19.5                  | 0.4                                   | 18.3                                  | 1.1                                   | 17.9                     |  |
| 154N101W34NWNE   | 39.9                  | 0.0                                   | 0.4                                   | 39.5                                  | 0.4                      |  |
| 154N101W34NWNW   | 6.8                   | 0.0                                   | 4.0                                   | 2.8                                   | 4.0                      |  |
| 154N101W34NWSE   | 1.7                   | 0.0                                   | 1.7                                   | 0.0                                   | 1.7                      |  |
| 154N101W34SENE   | 40.0                  | 0.0                                   | 4.1                                   | 35.9                                  | 4.1                      |  |
| 154N101W34SWNE   | 25.4                  | 0.0                                   | 9.6                                   | 15.8                                  | 9.6                      |  |
| 154N101W35NENE   | 1267.5                | 59.2                                  | 571.0                                 | 696.5                                 | 511.8                    |  |
| 154N101W36NENE   | 100.9                 | 23.7                                  | 76.7                                  | 24.3                                  | 53.0                     |  |
| 154N101W36NESE   | 2.5                   | 2.5                                   | 1.0                                   | 1.5                                   | -1.5                     |  |
| 154N101W36NWSE   | 38.4                  | 3.7                                   | 1.2                                   | 37.2                                  | -2.5                     |  |
| 154N101W36SENE   | 5.1                   | 3.2                                   | 0.1                                   | 5.0                                   | -3.1                     |  |
| 154N101W36SWNE   | 30.3                  | 0.1                                   | 0.0                                   | 30.3                                  | -0.1                     |  |
| 154N101W36SWSE   | 27.3                  | 7.9                                   | 3.5                                   | 23.9                                  | -4.4                     |  |
| BLM River Corridor East  | 19903.9               | 13349.9                               | 16587.6                               | 3316.2                                | 3237.7                   |  |
| Totals   | 49695.5               | 16686.8                               | 27089.1                               | 22606.3                               | 10402.4                  |  |

Table 2b. OHWM Delineation Results (Upstream of River Mile 1553.5)

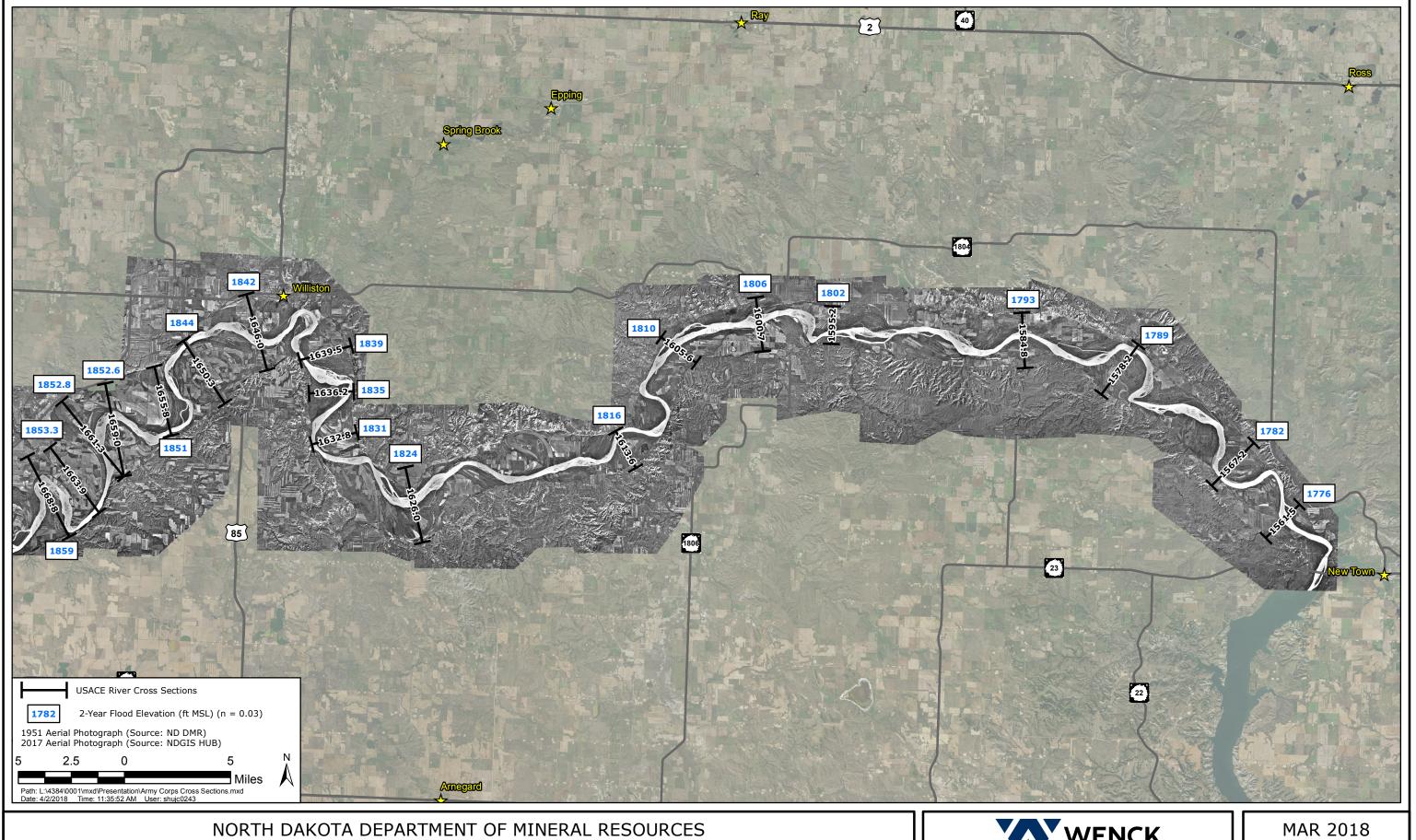
| Table 2b. OHWM Delineatio     | Table 2b. OHWM Delineation Results (Upstream of River Mile 1553.5) |                                       |                                       |                                       |                          |  |  |
|-------------------------------|--|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|--|--|
| Quarter-Quarter Section<br>ID | Total Area<br>(acres)  | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |  |  |
| 153N101W07NWNW                | 326.2  | 56.6                                  | 208.7                                 | 117.5                                 | 152.1                    |  |  |
| 153N101W17SWSW                | 37.1   | 3.5                                   | 6.0                                   | 31.1                                  | 2.5                      |  |  |
| 153N101W18NESE                | 55.2   | 9.8                                   | 9.7                                   | 45.5                                  | 0.0                      |  |  |
| 153N101W18NWSE                | 27.4   | 9.2                                   | 10.4                                  | 17.0                                  | 1.2                      |  |  |
| 153N101W18SWNW                | 16.1   | 0.0                                   | 6.5                                   | 9.6                                   | N/A                      |  |  |
| 153N101W18SWSE                | 0.8  | 0.8                                   | 0.7                                   | 0.0                                   | 0.0                      |  |  |
| 153N101W19NENE                | 430.2  | 0.0                                   | 234.2                                 | 196.1                                 | N/A                      |  |  |
| 153N101W19SESE                | 4.2  | 0.3                                   | 1.9                                   | 2.3                                   | 1.6                      |  |  |
| 153N101W20NWNW                | 20.8   | 2.5                                   | 7.4                                   | 13.4                                  | 4.9                      |  |  |
| 153N101W20NWSW                | 23.7   | 1.6                                   | 6.3                                   | 17.5                                  | 4.7                      |  |  |
| 153N101W20SWNW                | 19.2   | 2.7                                   | 7.0                                   | 12.2                                  | 4.3                      |  |  |
| 153N101W20SWSW                | 36.9   | 0.1                                   | 3.4                                   | 33.5                                  | 3.2                      |  |  |
| 153N101W30NENE                | 34.6   | 0.0                                   | 1.1                                   | 33.5                                  | N/A                      |  |  |
| 153N101W30NWNE                | 10.0   | 0.0                                   | 2.8                                   | 7.2                                   | N/A                      |  |  |
| 153N101W30NWNW                | 25.8   | 0.0                                   | 6.0                                   | 19.7                                  | N/A                      |  |  |
| 153N101W30NWSW                | 68.6   | 0.0                                   | 34.6                                  | 34.0                                  | N/A                      |  |  |
| 153N101W30SENW                | 23.8   | 0.0                                   | 4.5                                   | 19.3                                  | N/A                      |  |  |
| 153N101W30SWNE                | 39.8   | 0.0                                   | 0.9                                   | 38.9                                  | N/A                      |  |  |
| 153N102W01SESE                | 40.0   | 4.5                                   | 10.8                                  | 29.2                                  | N/A                      |  |  |
| 153N102W12NENE                | 39.9   | 0.0                                   | 35.1                                  | 4.8                                   | N/A                      |  |  |
| 153N102W12NESE                | 40.0   | 0.0                                   | 39.8                                  | 0.2                                   | N/A                      |  |  |
| 153N102W12NWNE                | 40.0   | 0.0                                   | 0.0                                   | 39.9                                  | N/A                      |  |  |
| 153N102W12NWSE                | 40.0   | 0.0                                   | 0.5                                   | 39.4                                  | N/A                      |  |  |
| 153N102W12SENE                | 40.0   | 0.0                                   | 40.0                                  | 0.0                                   | N/A                      |  |  |
| 153N102W12SESE                | 40.0   | 0.0                                   | 31.2                                  | 8.8                                   | N/A                      |  |  |
| 153N102W12SWNE                | 40.0   | 0.0                                   | 2.4                                   | 37.6                                  | N/A                      |  |  |
| 153N102W13NENE                | 40.0   | 0.0                                   | 11.7                                  | 28.3                                  | N/A                      |  |  |
| 153N102W13SENE                | 40.0   | 0.0                                   | 0.0                                   | 40.0                                  | N/A                      |  |  |
| 153N102W21NESE                | 39.9   | 0.0                                   | 39.9                                  | 0.0                                   | N/A                      |  |  |
| 153N102W21NESW                | 29.0   | 0.0                                   | 4.3                                   | 24.7                                  | N/A                      |  |  |
| 153N102W21NWSE                | 39.9   | 0.0                                   | 39.2                                  | 0.7                                   | N/A                      |  |  |
| 153N102W21SENE                | 40.0   | 0.0                                   | 15.3                                  | 24.8                                  | N/A                      |  |  |
| 153N102W21SESE                | 4.4  | 0.0                                   | 4.4                                   | 0.0                                   | N/A                      |  |  |
| 153N102W21SWNE                | 40.0   | 0.0                                   | 10.2                                  | 29.8                                  | N/A                      |  |  |
| 153N102W21SWSE                | 1.2  | 0.0                                   | 1.2                                   | 0.0                                   | N/A                      |  |  |
| 153N102W22NESE                | 39.9   | 0.0                                   | 22.8                                  | 17.1                                  | N/A                      |  |  |
| 153N102W22NESW                | 39.9   | 0.0                                   | 39.9                                  | 0.0                                   | N/A                      |  |  |

| Quarter-Quarter Section | Total Area | USACE Survey<br>Below OHWM | Project Area<br>Below OHWM | Project Area<br>Above OHWM | Net<br>Change |
|-------------------------|------------|----------------------------|----------------------------|----------------------------|---------------|
| ID AFONGO NA CONTRACT   | (acres)    | (acres)                    | (acres)                    | (acres)                    | (acres)       |
| 153N102W22NWSE          | 39.9       | 0.0                        | 39.6                       | 0.4                        | N/A           |
| 153N102W22NWSW          | 39.9       | 0.0                        | 39.9                       | 0.0                        | N/A           |
| 153N102W22SENW          | 39.9       | 0.0                        | 13.4                       | 26.6                       | N/A           |
| 153N102W22SESE          | 39.9       | 0.0                        | 39.9                       | 0.0                        | N/A           |
| 153N102W22SESW          | 23.6       | 0.0                        | 23.6                       | 0.0                        | N/A           |
| 153N102W22SWNE          | 39.9       | 0.0                        | 3.1                        | 36.8                       | N/A           |
| 153N102W22SWNW          | 40.0       | 0.0                        | 17.0                       | 23.0                       | N/A           |
| 153N102W22SWSE          | 36.4       | 0.0                        | 35.9                       | 0.5                        | N/A           |
| 153N102W22SWSW          | 13.2       | 0.0                        | 13.2                       | 0.0                        | N/A           |
| 153N102W23NWSW          | 39.9       | 0.0                        | 1.6                        | 38.3                       | N/A           |
| 153N102W23SESW          | 39.9       | 0.0                        | 11.5                       | 28.4                       | N/A           |
| 153N102W23SWSW          | 39.9       | 0.0                        | 33.3                       | 6.6                        | N/A           |
| 153N102W25NENE          | 41.4       | 0.0                        | 20.7                       | 20.7                       | N/A           |
| 153N102W25NENW          | 20.0       | 0.0                        | 10.3                       | 9.7                        | N/A           |
| 153N102W25NESE          | 32.2       | 0.0                        | 6.7                        | 25.5                       | N/A           |
| 153N102W25NESW          | 40.3       | 0.0                        | 40.3                       | 0.0                        | N/A           |
| 153N102W25NWNE          | 29.2       | 0.0                        | 17.2                       | 12.0                       | N/A           |
| 153N102W25NWNW          | 14.0       | 0.0                        | 1.9                        | 12.1                       | N/A           |
| 153N102W25NWSE          | 36.8       | 0.0                        | 34.5                       | 2.3                        | N/A           |
| 153N102W25NWSW          | 40.2       | 0.0                        | 40.2                       | 0.0                        | N/A           |
| 153N102W25SENW          | 1.6        | 0.0                        | 1.6                        | 0.0                        | N/A           |
| 153N102W25SESW          | 39.5       | 0.0                        | 37.4                       | 2.2                        | N/A           |
| 153N102W25SWNW          | 5.6        | 0.0                        | 5.6                        | 0.0                        | N/A           |
| 153N102W25SWSE          | 39.5       | 0.0                        | 14.6                       | 24.9                       | N/A           |
| 153N102W25SWSW          | 39.9       | 0.0                        | 39.4                       | 0.5                        | N/A           |
| 153N102W26NENE          | 14.0       | 0.0                        | 0.0                        | 14.0                       | N/A           |
| 153N102W26NENW          | 14.9       | 0.0                        | 14.8                       | 0.1                        | N/A           |
| 153N102W26NESE          | 40.0       | 0.0                        | 40.0                       | 0.0                        | N/A           |
| 153N102W26NESW          | 40.0       | 0.0                        | 1.0                        | 38.9                       | N/A           |
| 153N102W26NWNE          | 14.0       | 0.0                        | 2.3                        | 11.7                       | N/A           |
| 153N102W26NWNW          | 18.2       | 0.0                        | 18.2                       | 0.0                        | N/A           |
| 153N102W26NWSE          | 39.9       | 0.0                        | 24.2                       | 15.7                       | N/A           |
| 153N102W26SENE          | 3.7        | 0.0                        | 3.7                        | 0.0                        | N/A           |
| 153N102W26SENW          | 1.9        | 0.0                        | 0.9                        | 1.0                        | N/A           |
| 153N102W26SESE          | 40.0       | 0.0                        | 18.4                       | 21.6                       | N/A           |
| 153N102W26SWNE          | 0.7        | 0.0                        | 0.7                        | 0.0                        | N/A           |
| 153N102W26SWSE          | 40.1       | 0.0                        | 0.2                        | 39.9                       | N/A           |
| 153N102W27NENE          | 13.0       | 0.0                        | 13.0                       | 0.0                        | N/A           |
| 153N102W27NWNE          | 1.3        | 0.0                        | 1.0                        | 0.3                        | N/A           |

| Table 2b. OHWM Delineation Results (Upstream of River Mile 1553.5) |                       |                                       |                                       |                                       |                          |
|--|-----------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------|
| Quarter-Quarter Section<br>ID                                      | Total Area<br>(acres) | USACE Survey<br>Below OHWM<br>(acres) | Project Area<br>Below OHWM<br>(acres) | Project Area<br>Above OHWM<br>(acres) | Net<br>Change<br>(acres) |
| 153N102W28SESE   | 4.3                   | 0.0                                   | 4.3                                   | 0.0                                   | N/A                      |
| 153N102W28SWSE   | 17.0                  | 0.0                                   | 10.0                                  | 7.0                                   | N/A                      |
| 153N102W33NENE   | 31.8                  | 0.0                                   | 31.8                                  | 0.0                                   | N/A                      |
| 153N102W33NWNE   | 9.5                   | 0.0                                   | 3.1                                   | 6.4                                   | N/A                      |
| 153N102W33SENE   | 5.7                   | 0.0                                   | 3.2                                   | 2.5                                   | N/A                      |
| 153N102W34NESW   | 39.3                  | 0.0                                   | 18.0                                  | 21.2                                  | N/A                      |
| 153N102W34NWNW   | 32.0                  | 0.0                                   | 9.9                                   | 22.0                                  | N/A                      |
| 153N102W34NWSW   | 8.4                   | 0.0                                   | 8.4                                   | 0.0                                   | N/A                      |
| 153N102W34SENW   | 40.1                  | 0.0                                   | 3.5                                   | 36.6                                  | N/A                      |
| 153N102W34SESW   | 25.7                  | 0.0                                   | 22.1                                  | 3.6                                   | N/A                      |
| 153N102W34SWNW   | 35.7                  | 0.0                                   | 29.0                                  | 6.6                                   | N/A                      |
| 153N102W34SWSE   | 40.1                  | 0.0                                   | 8.0                                   | 32.1                                  | N/A                      |
| 153N102W36NENW   | 39.9                  | 0.0                                   | 0.6                                   | 39.3                                  | N/A                      |
| 153N102W36NWNW   | 39.9                  | 0.0                                   | 2.1                                   | 37.8                                  | N/A                      |
| BLM River Corridor West  | 3486.7                | 0.0                                   | 1748.5                                | 1738.2                                | 1748.5                   |
| Totals   | 6824.6                | 91.6                                  | 3484.1                                | 3340.5                                |                          |

8. Cross Section Locations and 2-Year Flood Levels

Maps 1 to 18 OHWM Delineation Results

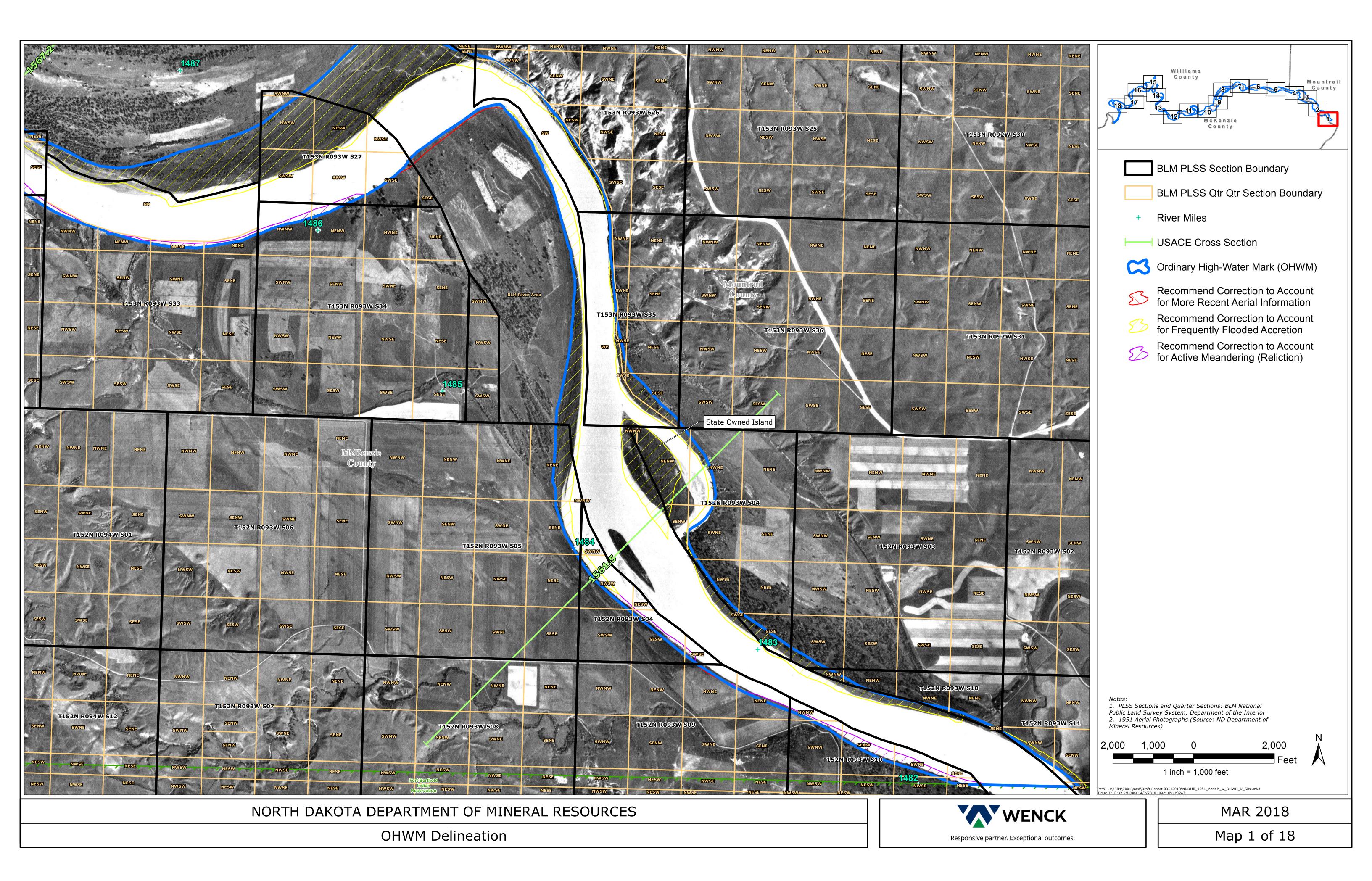


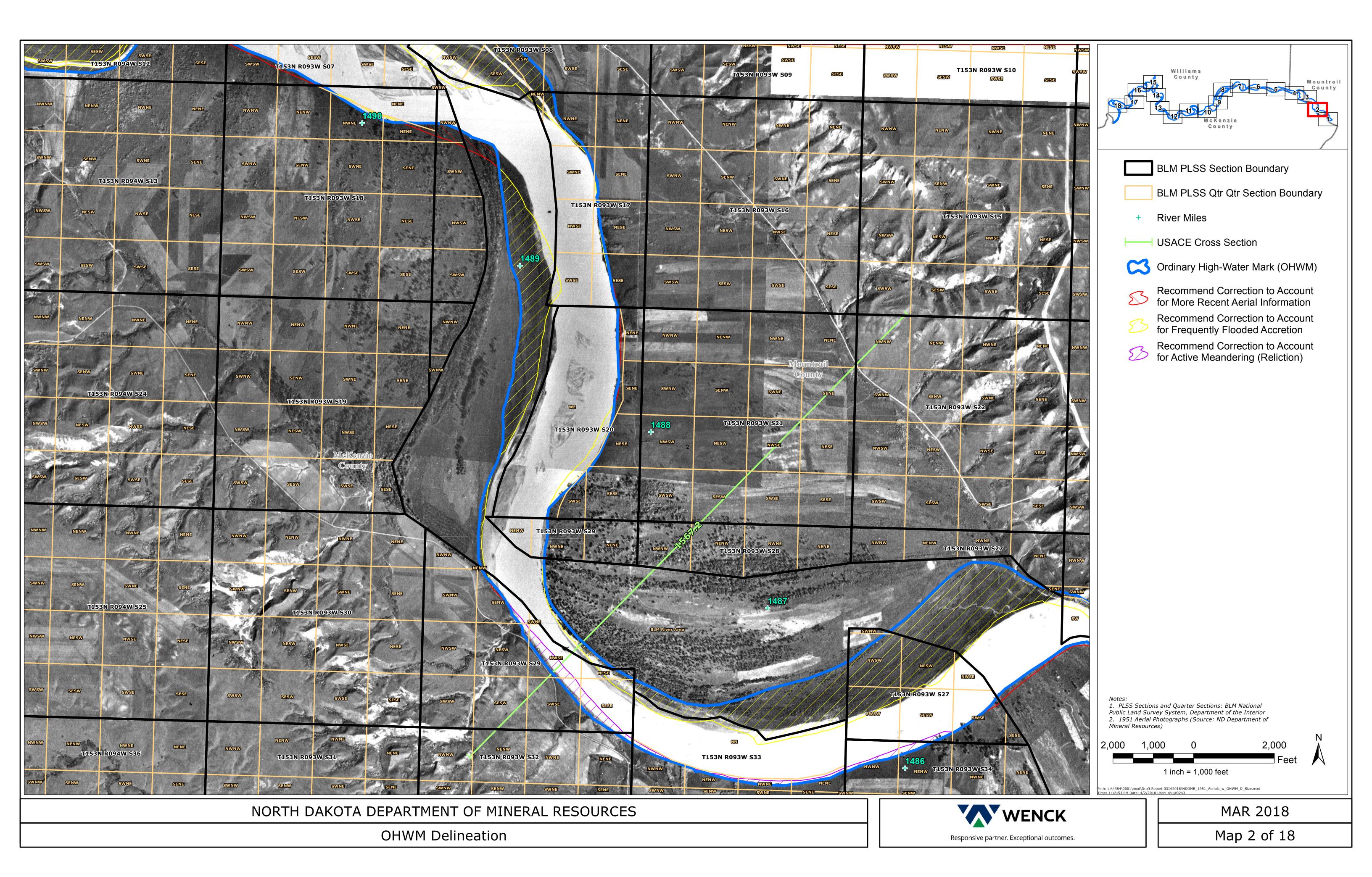
Cross-Section Locations and 2 Year Flood Levels

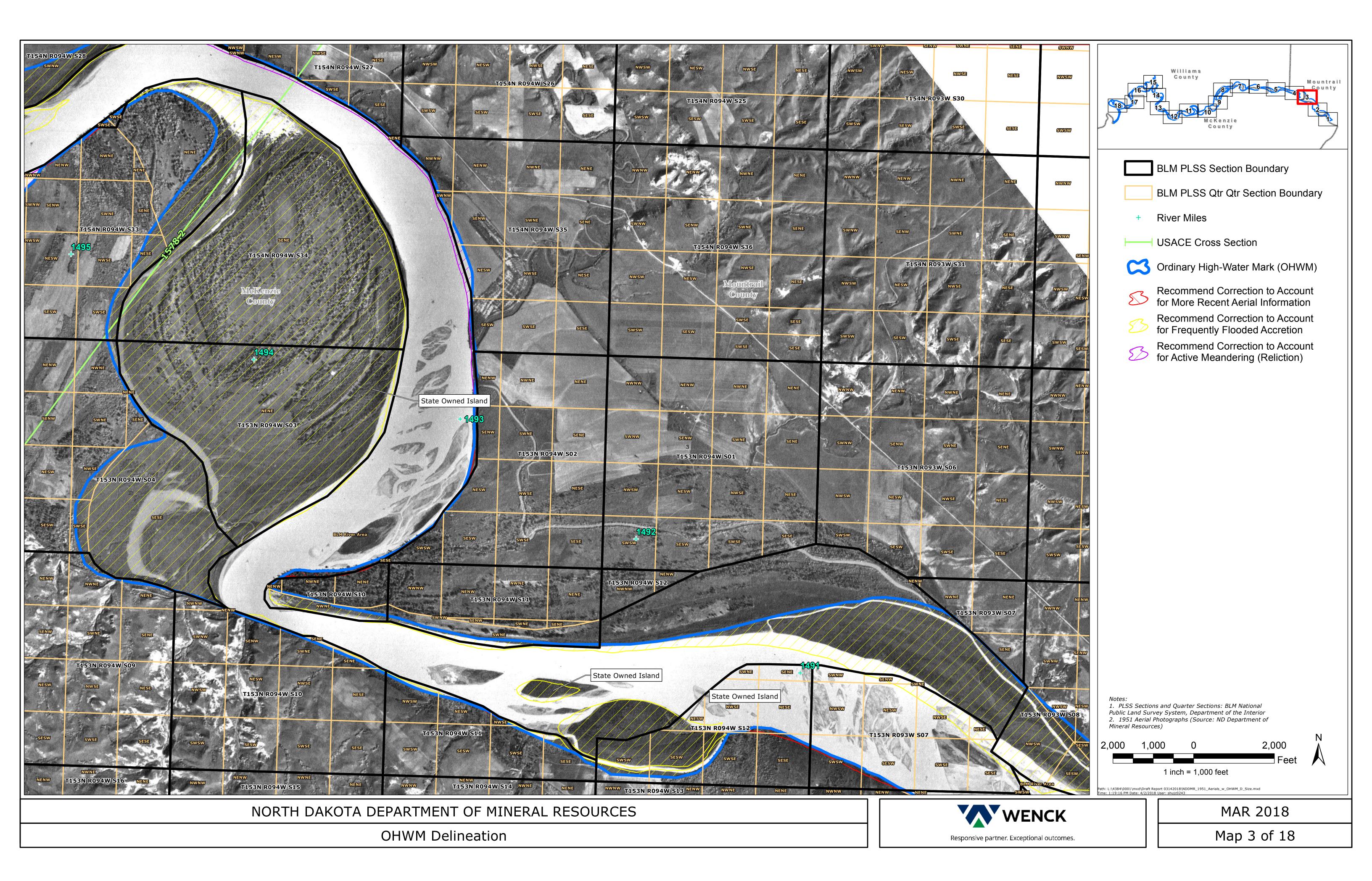


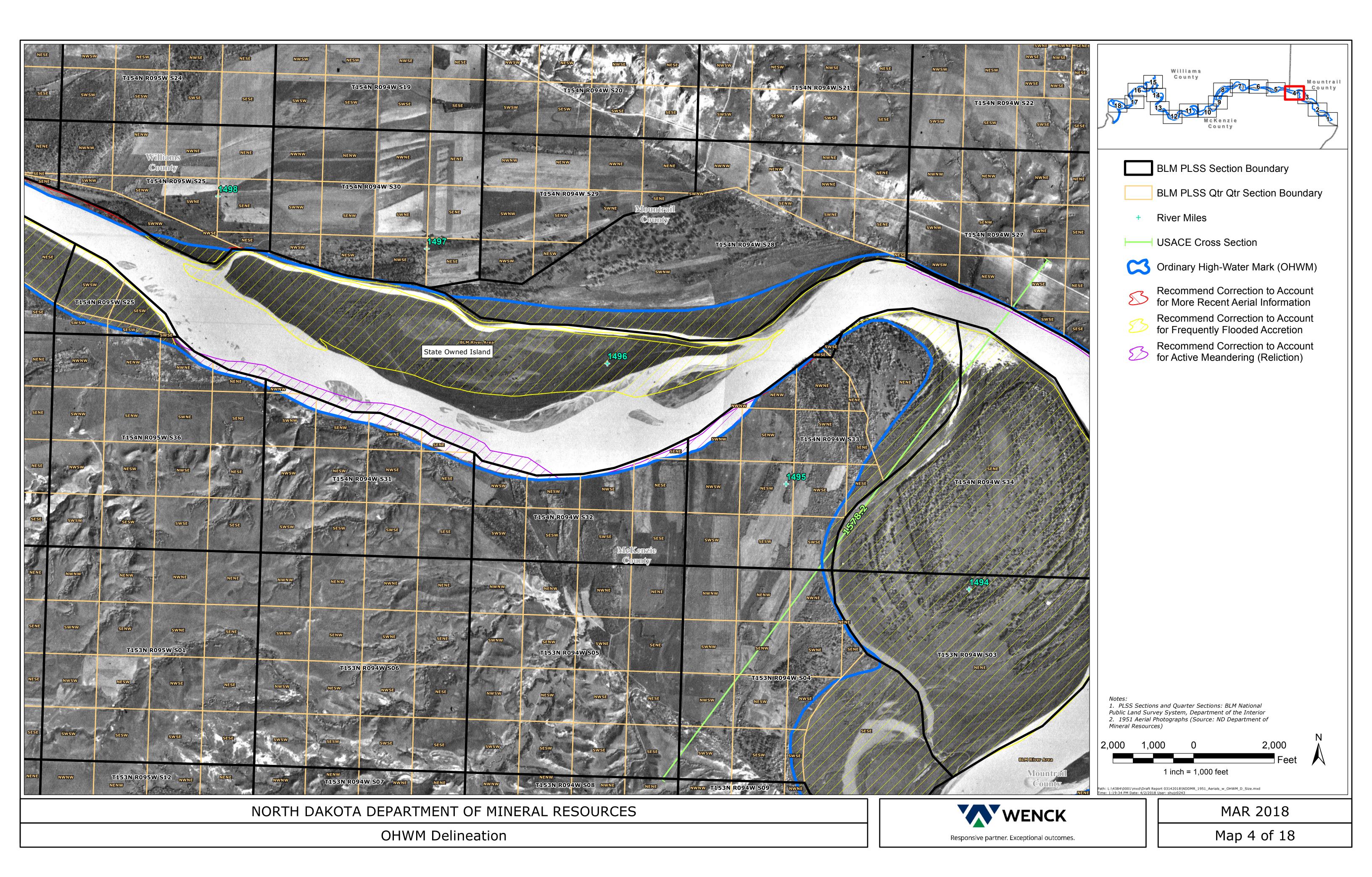
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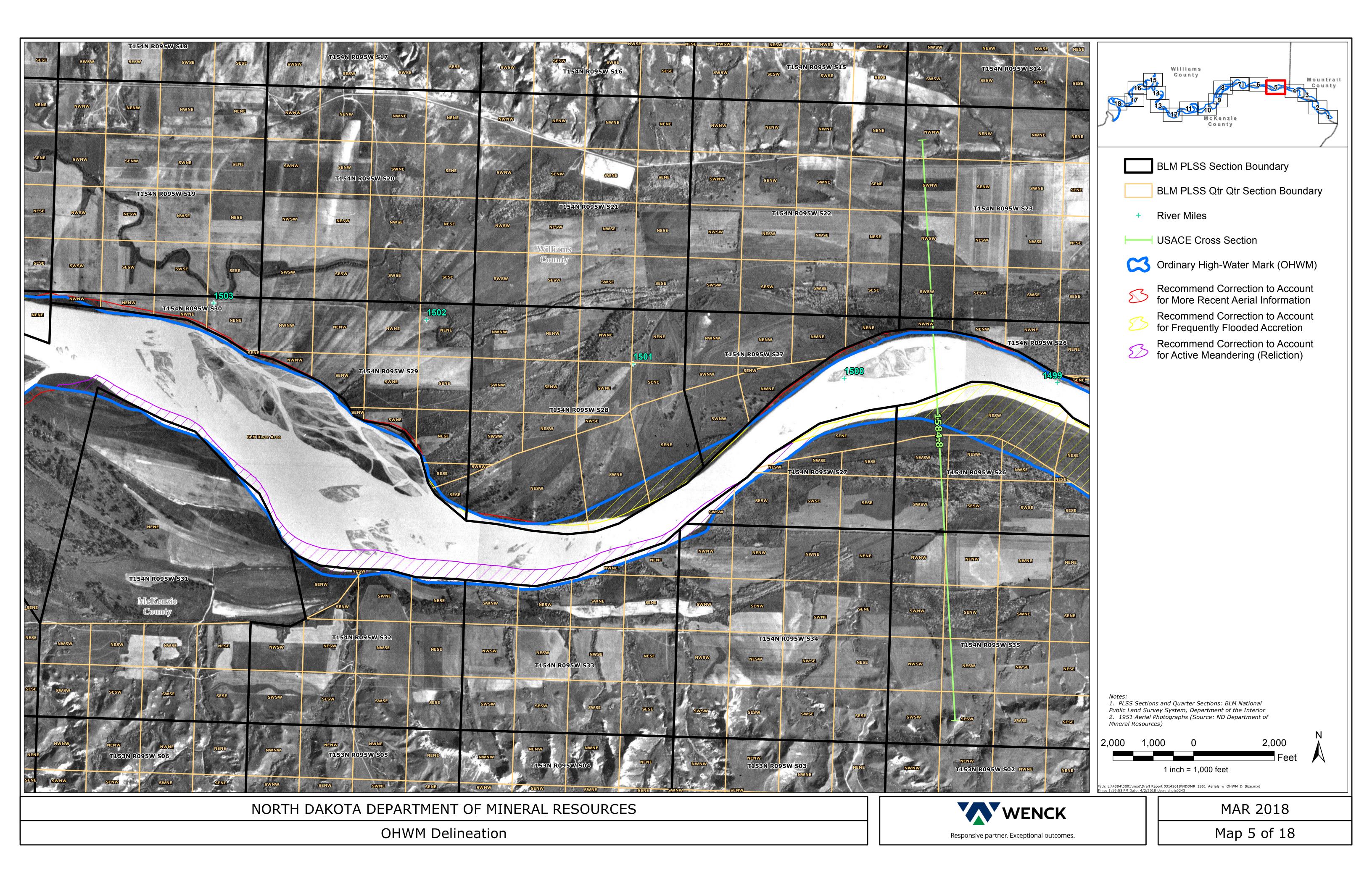
Figure 8

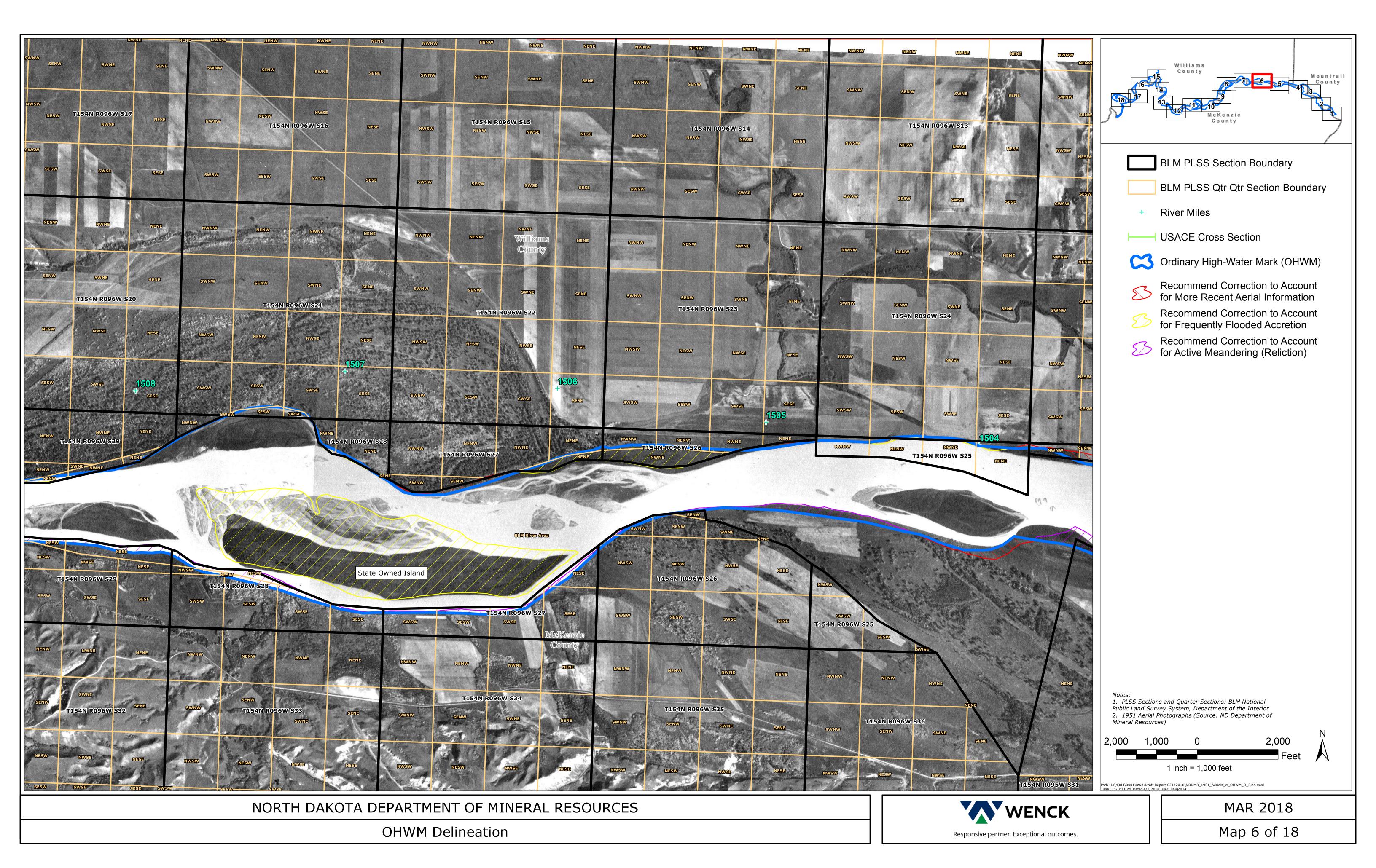


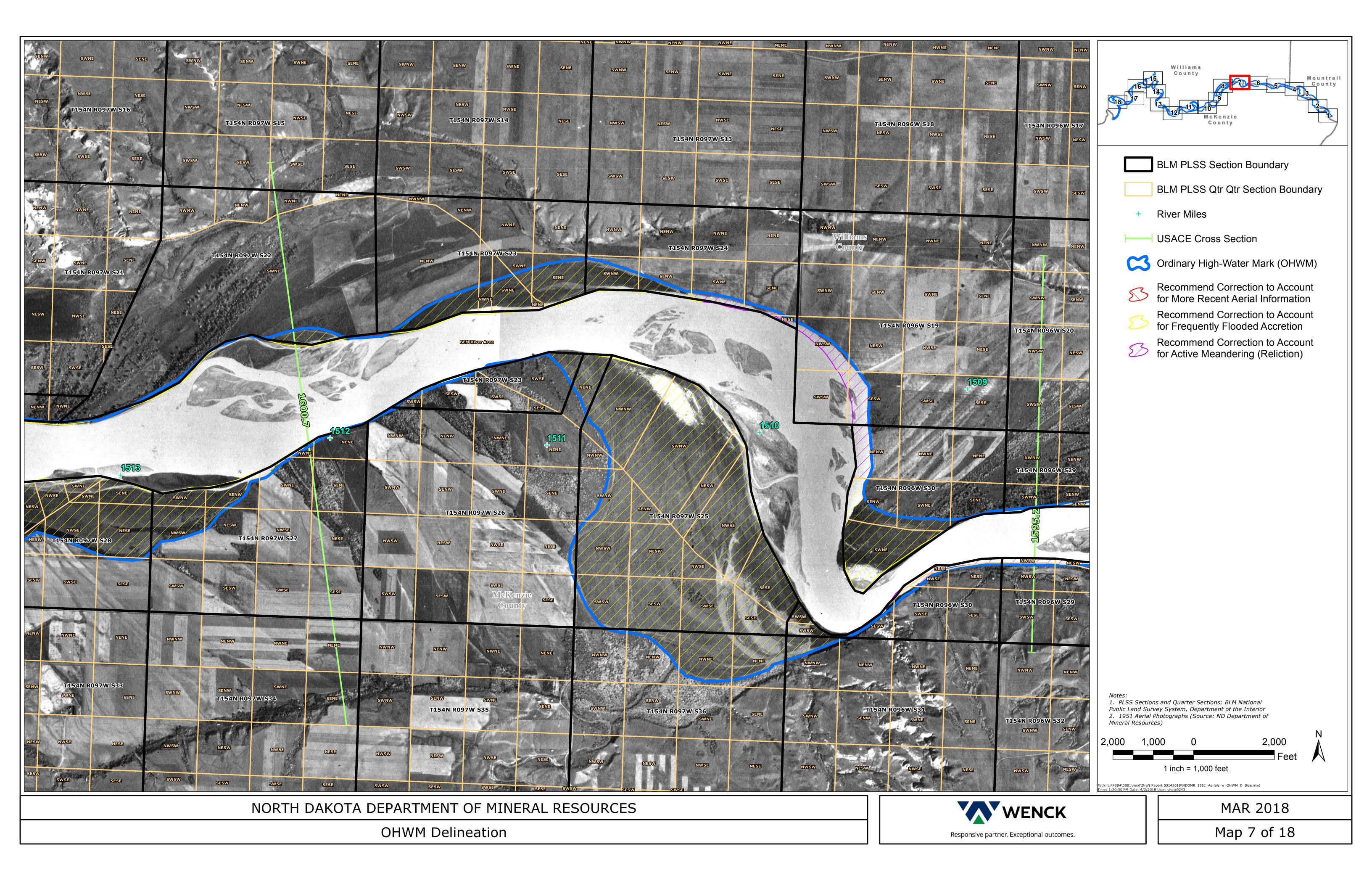


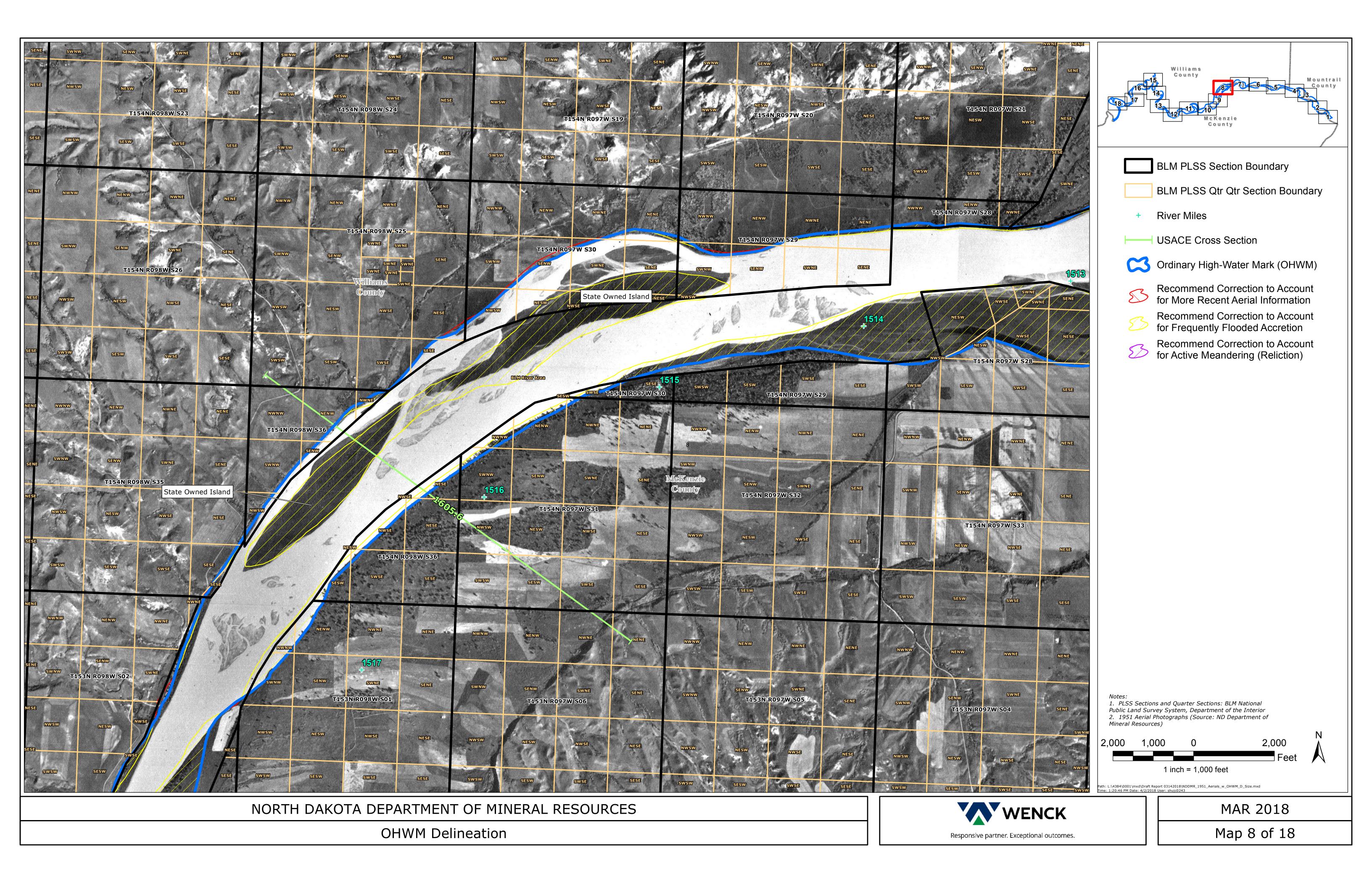


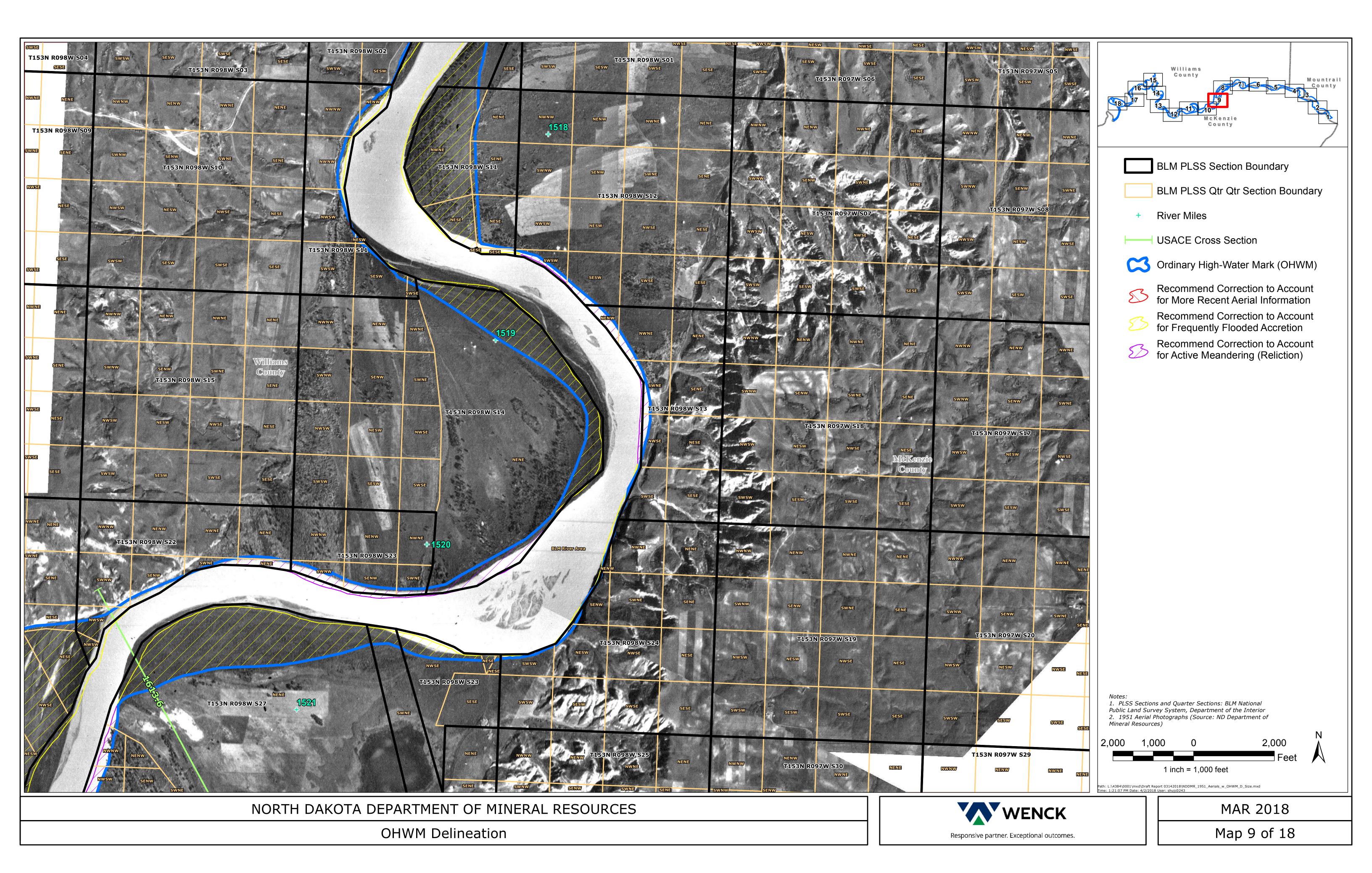


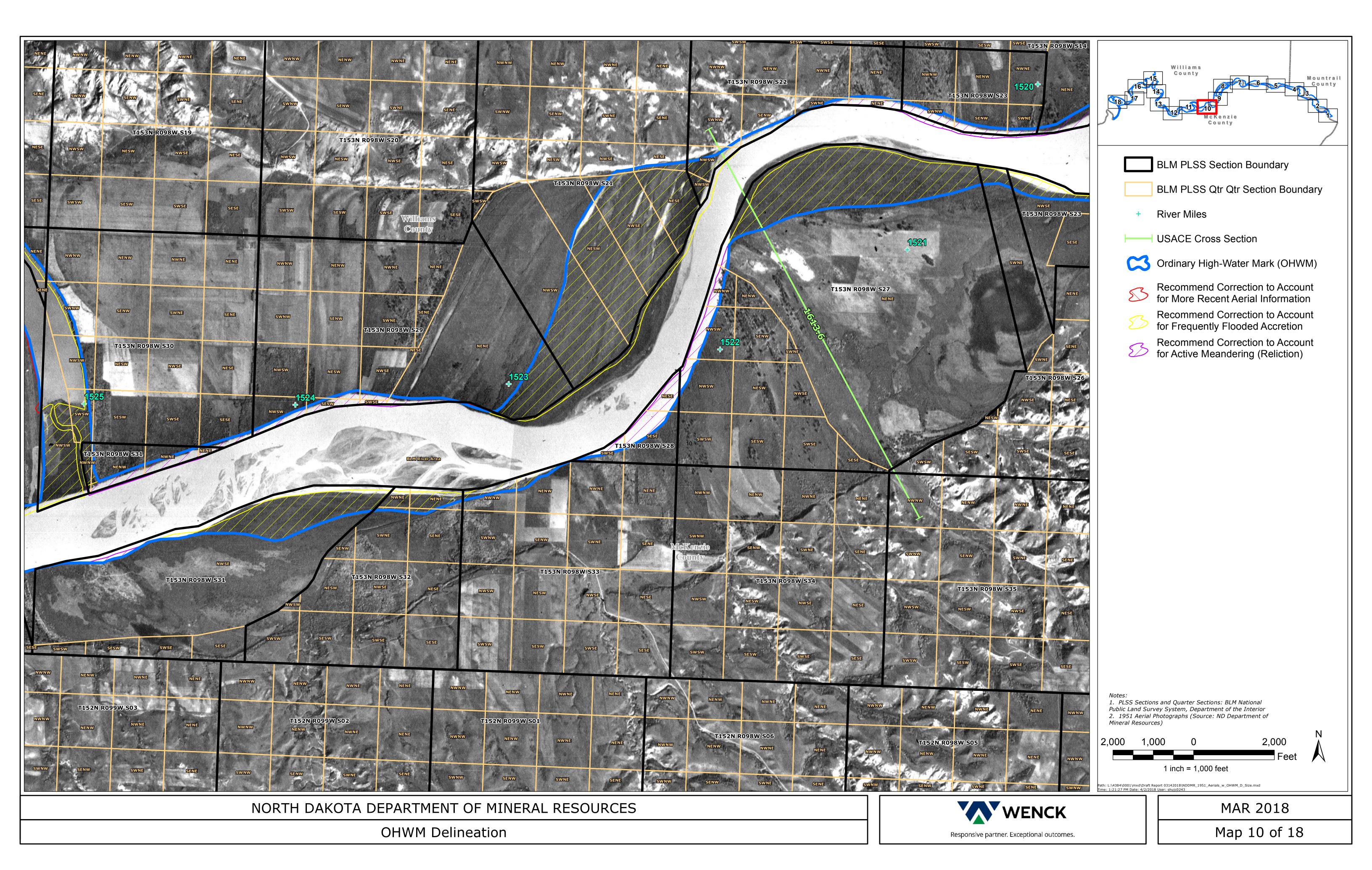


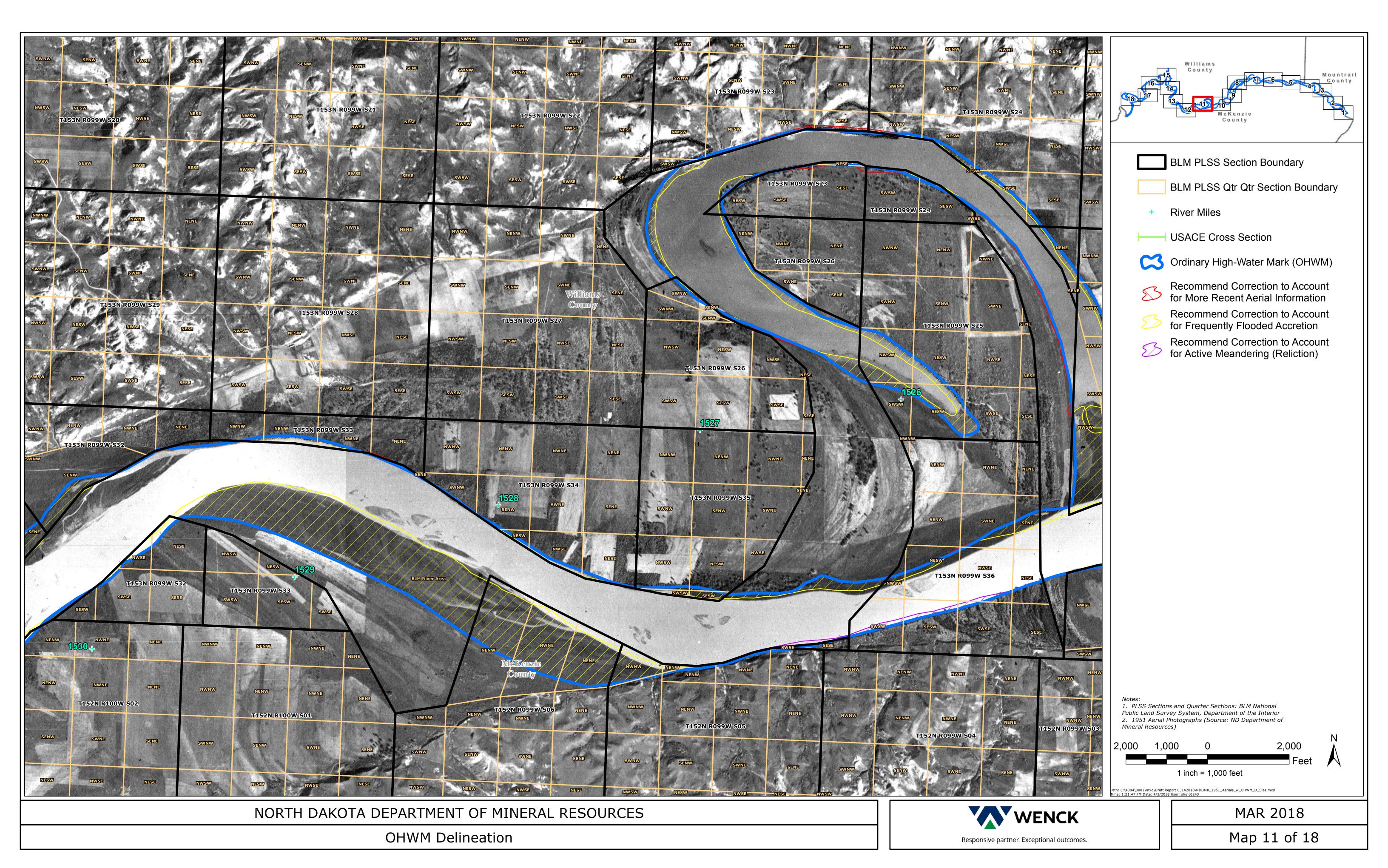


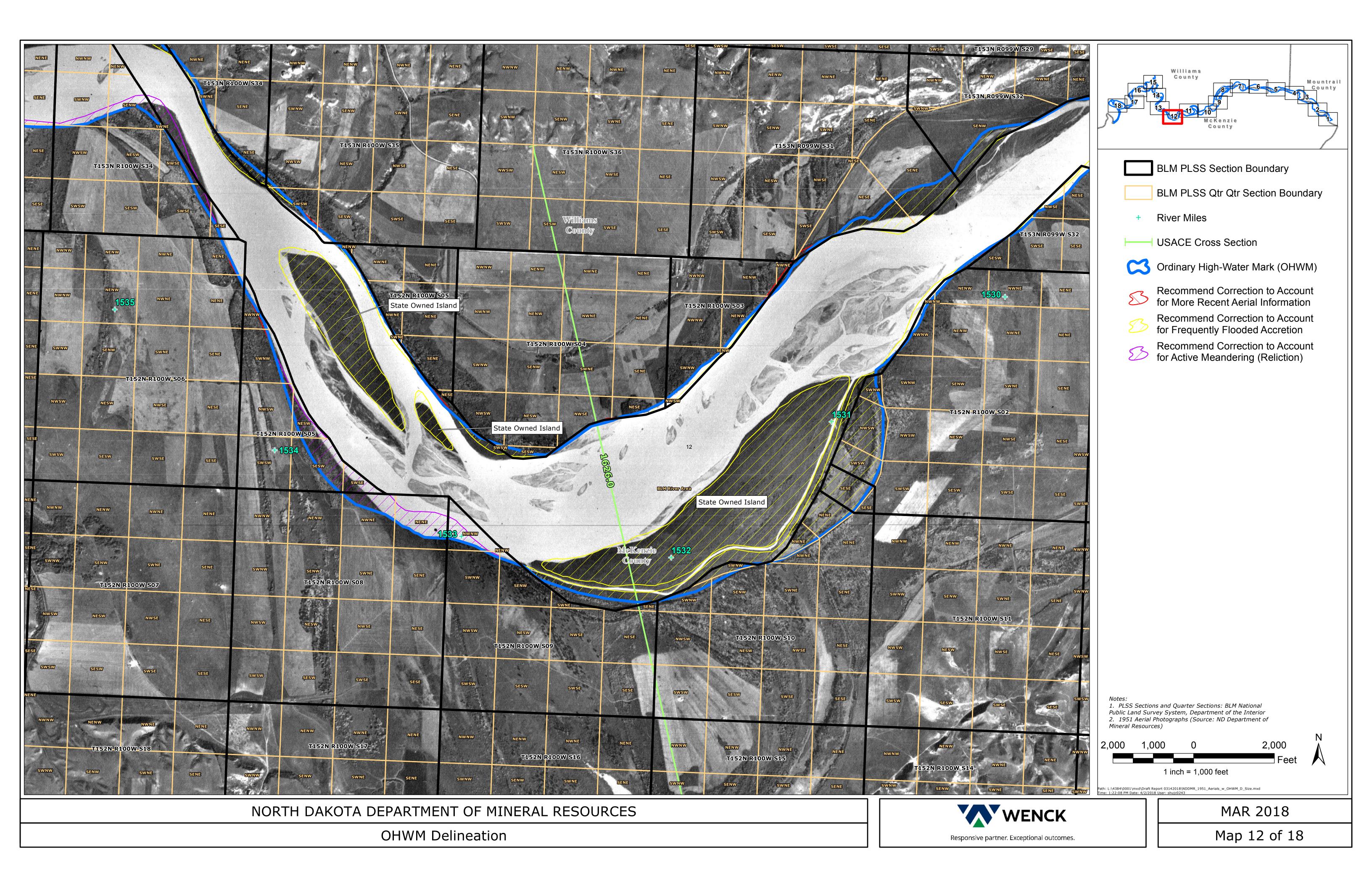


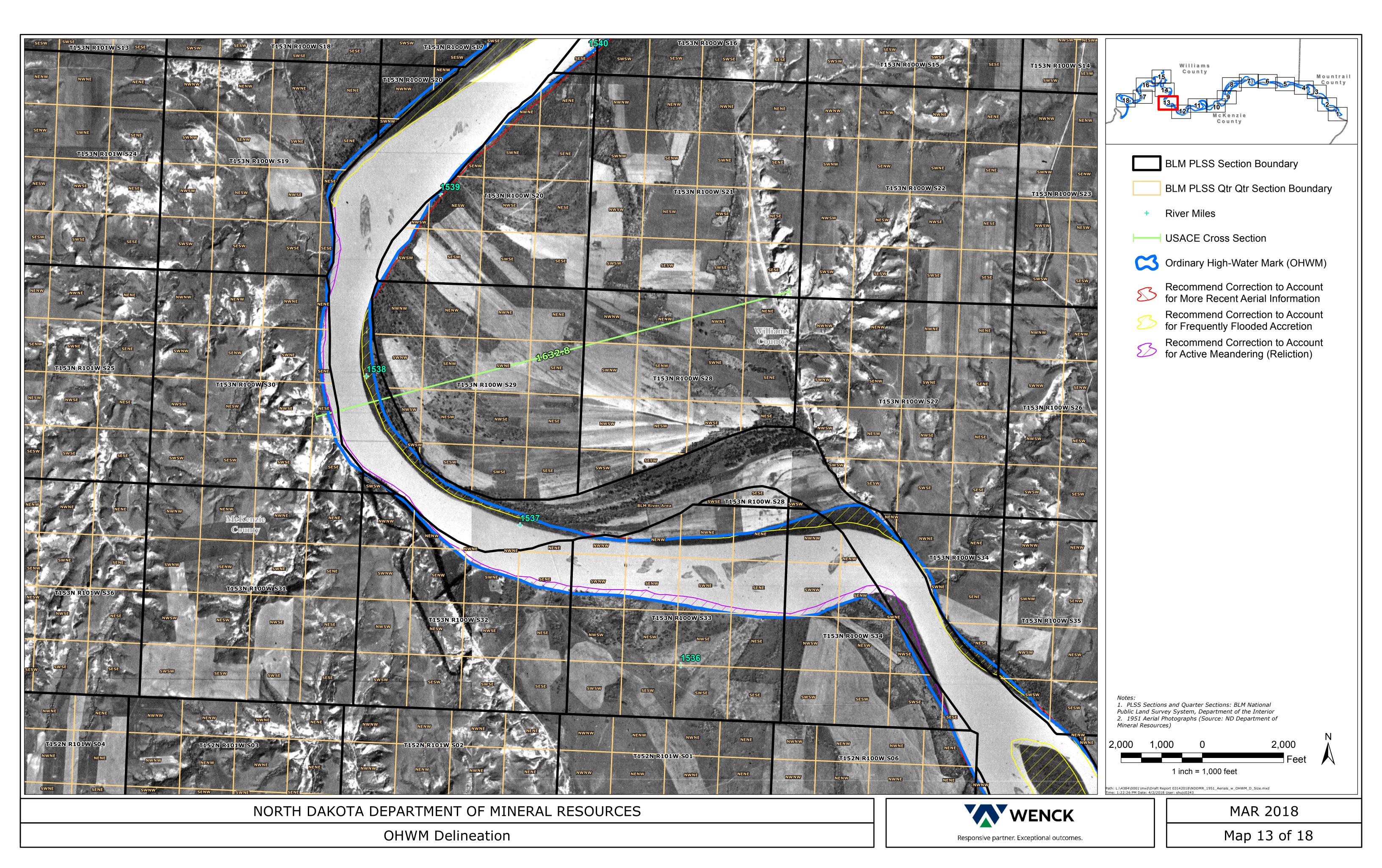


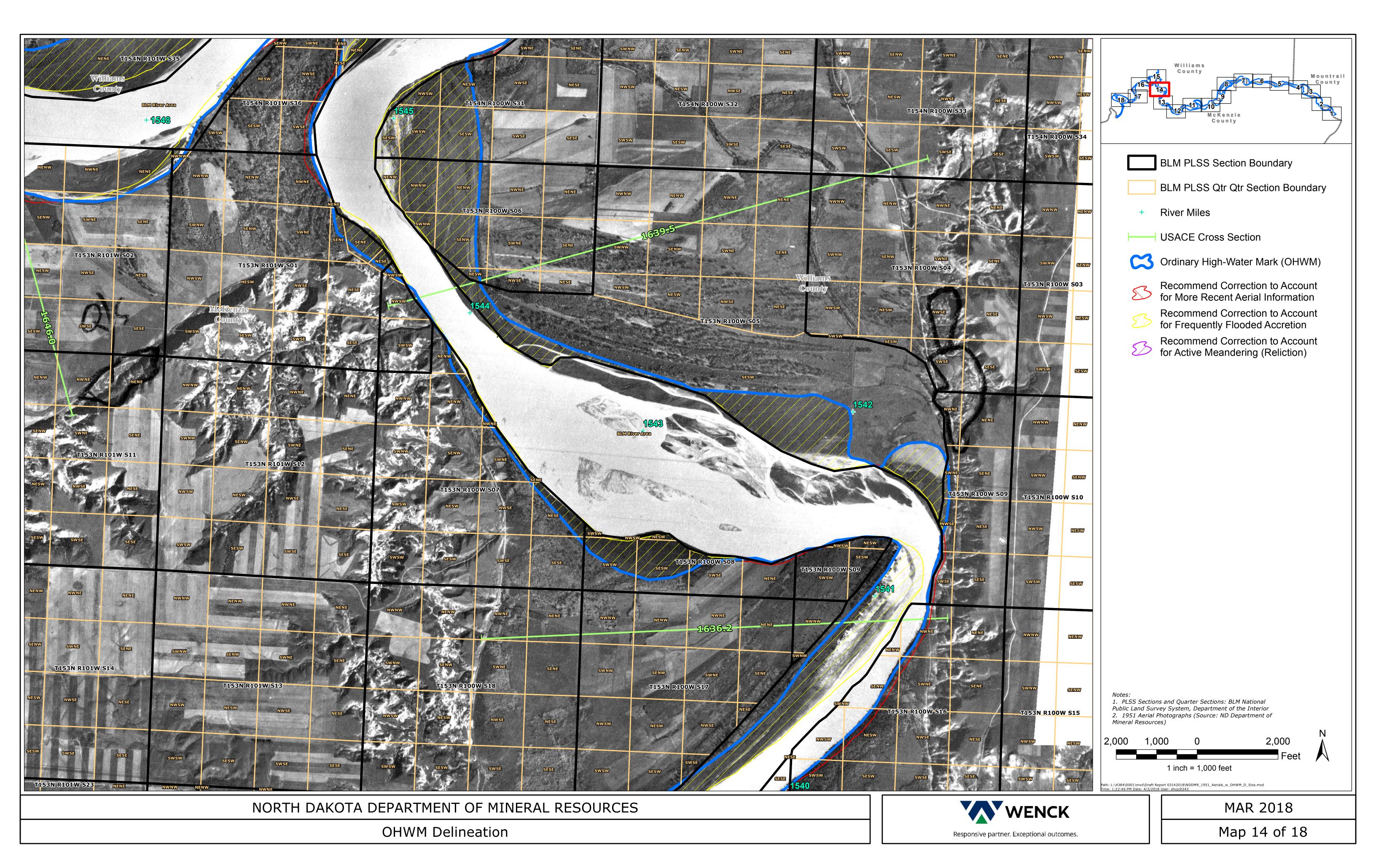


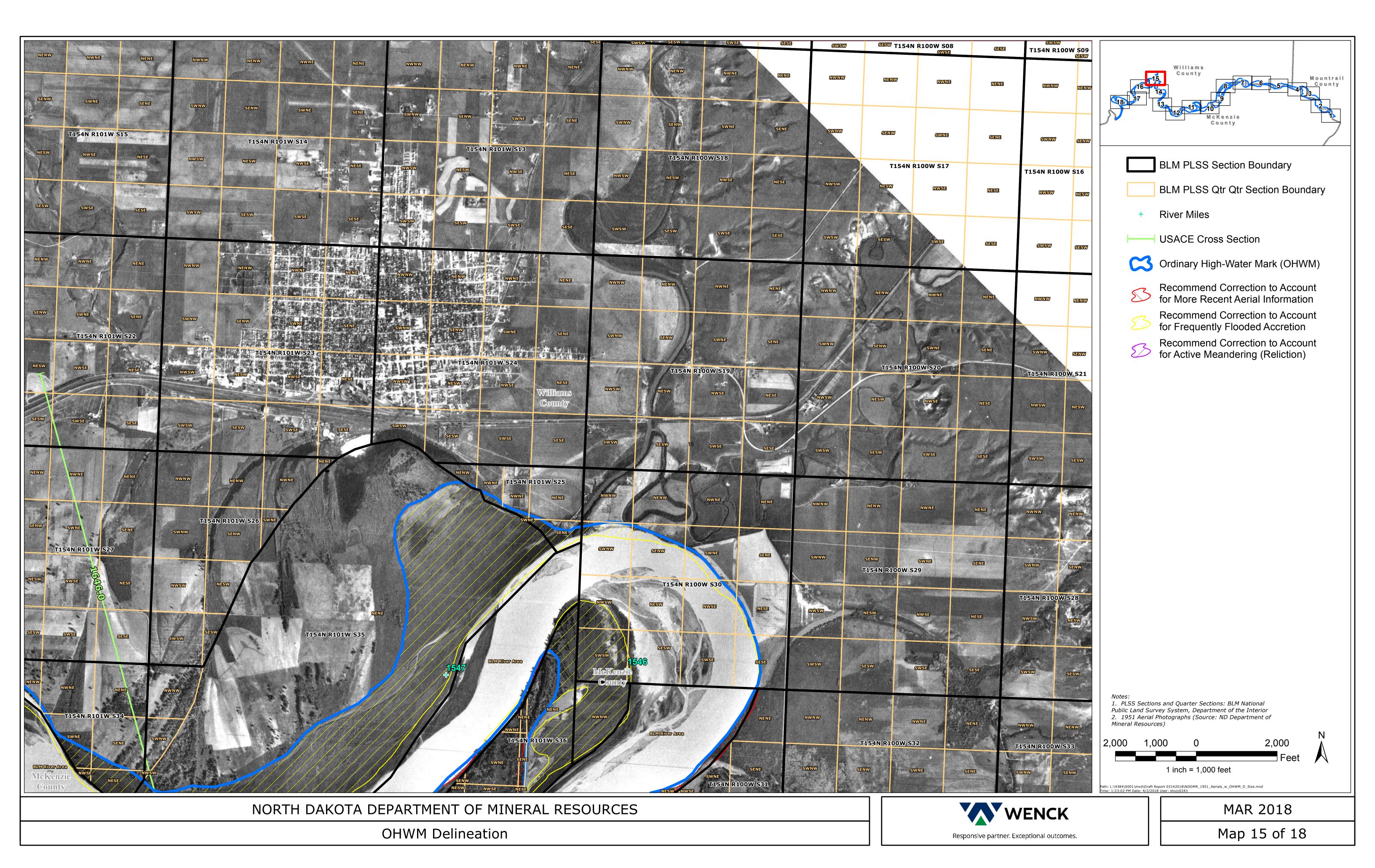


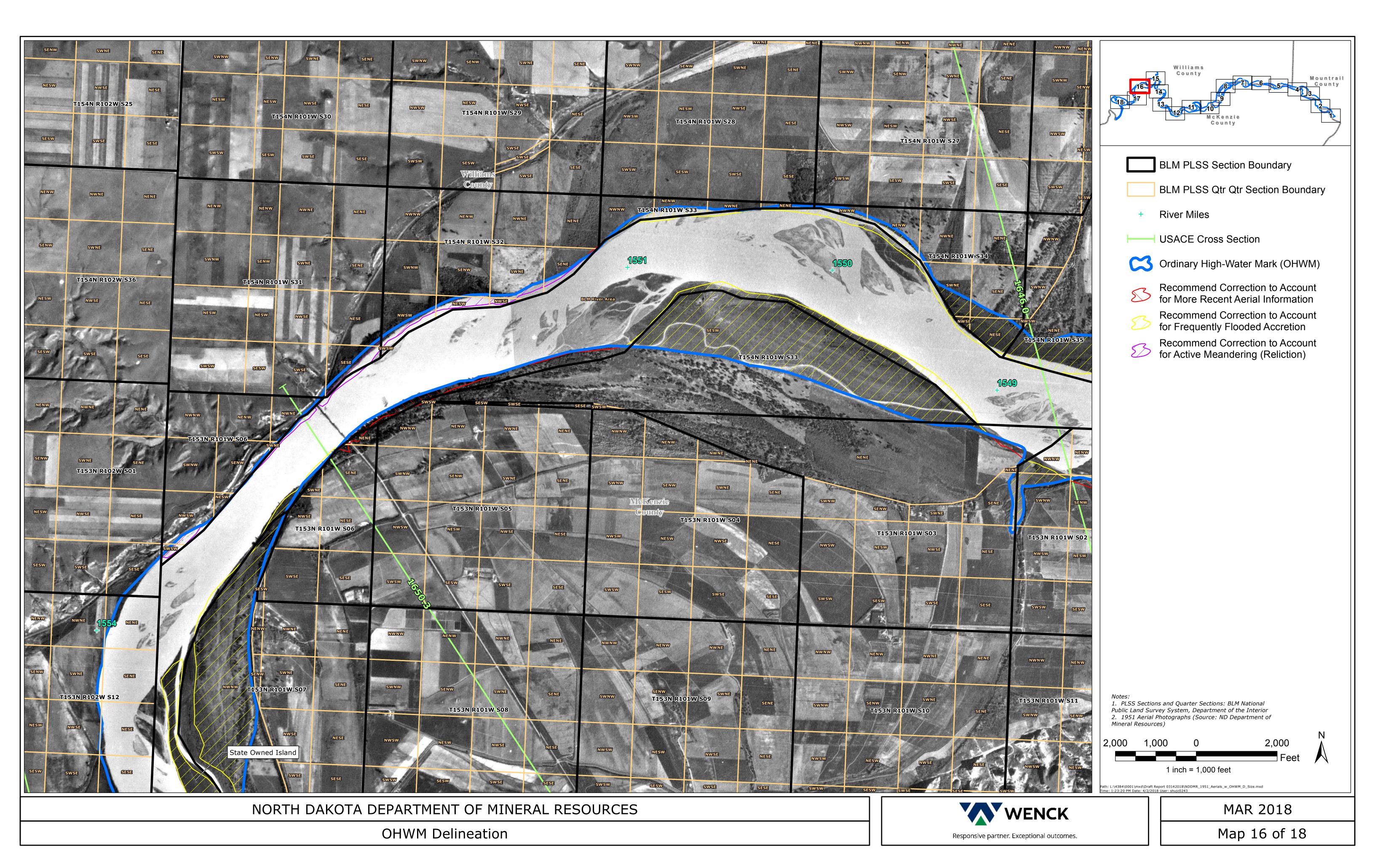


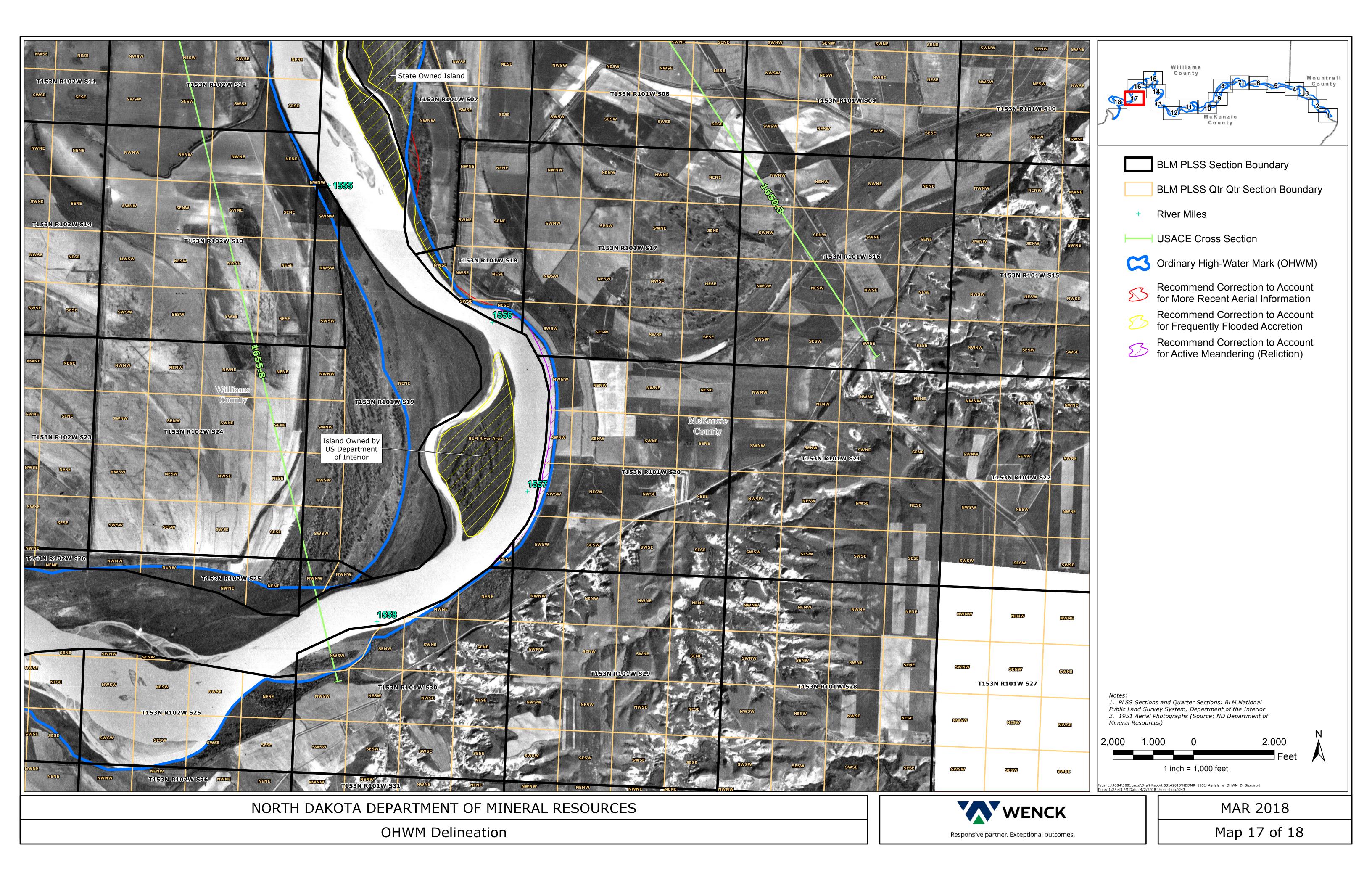


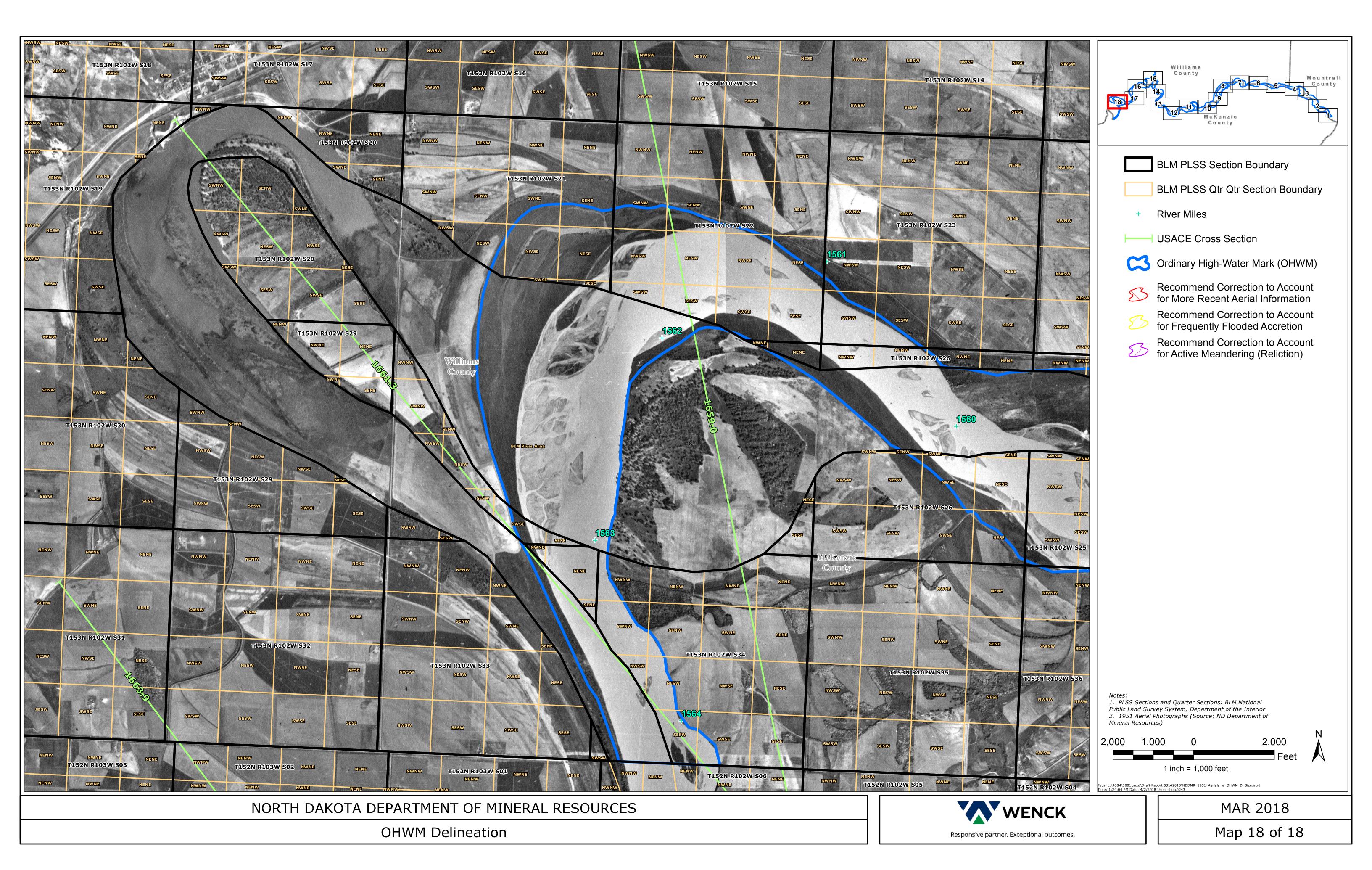












## Appendix A

State Law Basis for Ordinary High Water Mark Analysis North Dakota Century Code Chapter 61-33.1-03

And OHWM Definition

## CHAPTER 61-33.1 STATE OWNERSHIP OF MISSOURI RIVERBED

**61-33.1-01. Definitions. (Retroactive application - See note)**Note attached after Page 3 For purposes of this chapter, unless the context otherwise requires:

- "Corps survey" means the last known survey conducted by the army corps of engineers in connection with the corps' determination of the amount of land acquired by the corps for the impoundment of Lake Sakakawea and Lake Oahe, as supplemented by the supplemental plats created by the branch of cadastral survey of the United States bureau of land management.
- 2. "Historical Missouri riverbed channel" means the Missouri riverbed channel as it existed upon the closure of the Pick-Sloan Missouri basin project dams, and extends from the Garrison Dam to the southern border of sections 33 and 34, township 153 north, range 102 west which is the approximate location of river mile marker 1,565, and from the South Dakota border to river mile marker 1,303.
- 3. "Segment" means the individual segment maps contained within the corps survey final project maps for the Pick-Sloan project dams.
- 4. "State phase two survey" means the "Ordinary High Water Mark Survey Task Order #2 Final Technical Report" commissioned by the board of university and school lands.

# 61-33.1-02. Mineral ownership of land inundated by Pick-Sloan Missouri basin project dams. (Retroactive application - See note)

The state sovereign land mineral ownership of the riverbed segments inundated by Pick-Sloan Missouri basin project dams extends only to the historical Missouri riverbed channel up to the ordinary high water mark. The state holds no claim or title to any minerals above the ordinary high water mark of the historical Missouri riverbed channel inundated by Pick-Sloan Missouri basin project dams, except for original grant lands acquired by the state under federal law and any minerals acquired by the state through purchase, foreclosure, or other written conveyance. Mineral ownership of the riverbed segments inundated by Pick-Sloan Missouri basin project dams which are located within the exterior boundaries of the Fort Berthold reservation and Standing Rock Indian reservation is controlled by other law and is excepted from this section.

# 61-33.1-03. Determination of the ordinary high water mark of the historical Missouri riverbed channel. (Retroactive application - <u>See note</u>)

- 1. The corps survey must be considered the presumptive determination of the ordinary high water mark of the historical Missouri riverbed channel, subject only to the review process under this section and judicial review as provided in this chapter.
- 2. Effective April 21, 2017, the department of mineral resources shall commence procurement to select a qualified engineering and surveying firm to conduct a review of the corps survey under this section. The review must be limited to the corps survey segments from the northern boundary of the Fort Berthold Indian reservation to the southern border of sections 33 and 34, township 153 north, range 102 west. Within ninety days of the first date of publication of the invitation, the department shall select and approve a firm for the review. The department may not select or approve a firm that has a conflict of interest in the outcome of the review, including any firm that has participated in a survey of the Missouri riverbed for the state or a state agency, or participated as a party or expert witness in any litigation regarding an assertion by the state of mineral ownership of the Missouri riverbed.
- 3. The selected and approved firm shall review the delineation of the ordinary high water mark of the corps survey segments. The review must determine whether clear and convincing evidence establishes that a portion of the corps survey does not reasonably reflect the ordinary high water mark of the historical Missouri riverbed channel under state law. The following parameters, historical data, materials, and applicable state laws must be considered in the review:

- a. Aerial photography of the historical Missouri riverbed channel existing before the closure date of the Pick-Sloan project dams;
- b. The historical records of the army corps of engineers pertaining to the corps survey;
- c. Army corps of engineers and United States geological survey elevation and Missouri River flow data;
- d. State case law regarding the identification of the point at which the presence of action of the water is so continuous as to destroy the value of the land for agricultural purposes, including hay lands. Land where the high and continuous presence of water has destroyed its value for agricultural purposes, including hay land, generally must be considered within the ordinary high water mark. The value for agricultural purposes is destroyed at the level where significant, major, and substantial terrestrial vegetation ends or ceases to grow. Lands having agricultural value capable of growing crops or hay, but not merely intermittent grazing or location of cattle, generally must be considered above the ordinary high water mark; and (copies appended following)
- e. Subsection 3 of section 61-33-01 and section 47-06-05, which provide all accretions are presumed to be above the ordinary high water mark and are not sovereign lands. Accreted lands may be determined to be within the ordinary high water mark of the historical Missouri riverbed channel based on clear and convincing evidence. Areas of low-lying and flat lands where the ordinary high water mark may be impracticable to determine due to inconclusive aerial photography or inconclusive vegetation analysis must be presumed to be above the ordinary high water mark and owned by the riparian landowner.
- 4. The firm shall complete the review within six months of entering a contract with the department of mineral resources. The department may extend the time required to complete the review if the department deems an extension necessary.
- 5. Upon completion of the review, the firm shall provide its findings to the department. The findings must address each segment of the corps survey the firm reviewed and must include a recommendation to either maintain or adjust, modify, or correct the corps survey as the delineation of the ordinary high water mark for each segment. The firm may recommend an adjustment, modification, or correction to a segment of the corps survey only if clear and convincing evidence establishes the corps survey for that segment does not reasonably reflect the ordinary high water mark of the historical Missouri riverbed channel under state law.
- 6. The department shall publish notice of the review findings and a public hearing to be held on the findings. The public must have sixty days after publication of the notice to submit comments to the department. At the end of the sixty days, the department shall hold the public hearing on the review.
- 7. After the public hearing, the department, in consultation with the firm, shall consider all public comments, develop a final recommendation on each of the review findings, and deliver the final recommendations to the industrial commission, which may adopt or modify the recommendations. The industrial commission may modify a recommendation from the department only if it finds clear and convincing evidence from the resources in subsection 3 that the recommendation is substantially inaccurate. The industrial commission's action on each finding will determine the delineation of the ordinary high water mark for the segment of the river addressed by the finding.

#### 61-33.1-04. Implementation. (Retroactive application - See note)

- 1. Within six months after the adoption of the final review findings by the industrial commission:
  - a. Any royalty proceeds held by operators attributable to oil and gas mineral tracts lying entirely above the ordinary high water mark of the historical Missouri riverbed channel on both the corps survey and the state phase two survey must

- be released to the owners of the tracts, absent a showing of other defects affecting mineral title; and
- b. Any royalty proceeds held by the board of university and school lands attributable to oil and gas mineral tracts lying entirely above the ordinary high water mark of the historical Missouri riverbed channel on both the corps survey and the state phase two survey must be released to the relevant operators to distribute to the owners of the tracts, absent a showing of other defects affecting mineral title.
- 2. Upon adoption of the final review findings by the industrial commission:
  - a. The board of university and school lands shall begin to implement any acreage adjustments, lease bonus and royalty refunds, and payment demands as may be necessary relating to state-issued oil and gas leases. The board shall complete the adjustments, refunds, and payment demands within two years after the date of adoption of the final review findings.
  - b. Operators of oil and gas wells affected by the final review findings immediately shall begin to implement any acreage and revenue adjustments relating to state-owned and privately owned oil and gas interests. The operators shall complete the adjustments within two years after the date of adoption of the review findings. Any applicable penalties, liability, or interest for late payment of royalties or revenues from an affected oil or gas well may not begin to accrue until the end of the two-year deadline. The filing of an action under section 61-33.1-05 tolls the deadline for any oil and gas well directly affected by the action challenging the review finding.

## 61-33.1-05. Actions challenging review findings. (Retroactive application - See note)

An interested party seeking to bring an action challenging the review findings or recommendations or the industrial commission actions under this chapter shall commence an action in district court within two years of the date of adoption of the final review findings by the industrial commission. The plaintiff bringing an action under this section may challenge only the final review finding for the section or sections of land in which the plaintiff asserts an interest. The state and all owners of record of fee or leasehold estates or interests affected by the finding, recommendation, or industrial commission action challenged in the action under this section must be joined as parties to the action. A plaintiff or defendant claiming a boundary of the ordinary high water mark of the historical Missouri riverbed channel which varies from the boundary determined under this chapter bears the burden of establishing the variance by clear and convincing evidence based on evidence of the type required to be considered by the engineering and surveying firm under subsection 3 of section 61-33.1-03. Notwithstanding any other provision of law, an action brought in district court under this section is the sole remedy for challenging the final review, recommendations, and determination of the ordinary high water mark under this chapter, and preempts any right to rehearing, reconsideration, administrative appeal, or other form of civil action provided under law.

#### 61-33.1-06. Public domain lands. (Retroactive application - See note)

Notwithstanding any provision of this chapter to the contrary, the ordinary high water mark of the historical Missouri riverbed channel abutting nonpatented public domain lands owned by the United States must be determined by the branch of cadastral study of the United States bureau of land management in accordance with federal law.

### 61-33.1-07. State engineer regulatory jurisdiction. (Retroactive application - See note)

This chapter does not affect the authority of the state engineer to regulate the historical Missouri riverbed channel, minerals other than oil and gas, or the waters of the state, provided the regulation does not affect ownership of oil and gas minerals in and under the riverbed or lands above the ordinary high water mark of the historical Missouri riverbed channel inundated by Pick-Sloan Missouri basin project dams.

Note referenced in North Dakota Century Code chapter 61-33.1-03

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As provided by S.L. 2017, ch. 426, § 4, this section is retroactive to the date of closure of the Pick-Sloan Missouri basin project dams. The ordinary high water mark determination under this Act is retroactive and applies to all oil and gas wells spud after January 1, 2006, for purposes of oil and gas mineral and royalty ownership.

## CHAPTER 61-33 SOVEREIGN LAND MANAGEMENT

#### 61-33-01. Definitions.

As used in this chapter, unless the context otherwise requires:

- 1. "Board" means the sovereign lands advisory board.
- 2. "Board of university and school lands" means that entity created by section 15-01-01.
- 3. "Sovereign lands" means those areas, including beds and islands, lying within the ordinary high water mark of navigable lakes and streams. Lands established to be riparian accretion or reliction lands pursuant to section 47-06-05 are considered to be above the ordinary high water mark and are not sovereign lands.
- 4. "State engineer" means the person appointed by the state water commission pursuant to section 61-03-01.

## 61-33-02. Administration of sovereign lands.

All sovereign lands of the state must be administered by the state engineer and the board of university and school lands subject to the provisions of this chapter. Lands managed pursuant to this chapter are not subject to leasing provisions found elsewhere in this code.

## 61-33-03. Transfer of possessory interests in real property.

All possessory interests now owned or that may be acquired except oil, gas, and related hydrocarbons, in the sovereign lands of the state owned or controlled by the state or any of its officers, departments, or the Bank of North Dakota, together with any future increments, are transferred to the state of North Dakota, acting by and through the state engineer. All such possessory interests in oil, gas, and related hydrocarbons in the sovereign lands of the state are transferred to the state of North Dakota, acting by and through the board of university and school lands. These transfers are self-executing. No evidence other than the provisions of this chapter is required to establish the fact of transfer of title to the state of North Dakota, acting by and through the state engineer and board of university and school lands. Proper and sufficient delivery of all title documents is conclusively presumed.

### 61-33-04. Existing contracts and encumbrances recognized.

The transfers made by this chapter are subject to all existing contracts, rights, easements, and encumbrances made or sanctioned by the state or any of its officers or departments.

### 61-33-05. Duties and powers of the state engineer.

The state engineer shall manage, operate, and supervise all properties transferred to it by this chapter; may enter into any agreements regarding such property; may enforce all rights of the owner in its own name; may issue and enforce administrative orders and recover the cost of the enforcement from the party against which enforcement is sought; and may make and execute all instruments of release or conveyance as may be required pursuant to agreements made with respect to such assets, whether such agreements were made heretofore, or are made hereafter. The state engineer may enter agreements with the game and fish department or other law enforcement entities to enforce this chapter and rules adopted under this chapter.

## 61-33-06. Duties and powers of the board of university and school lands.

The board of university and school lands shall manage, operate, and supervise all properties transferred to it by this chapter; may enter into any agreements regarding such property; may enforce all subsurface rights of the owner in its own name; and may make and execute all instruments of release or conveyance as may be required pursuant to agreements made with respect to such assets, whether such agreements were made heretofore, or are made hereafter.

### 61-33-07. Deposit of income.

All income derived from the lease and management of the lands acquired by the state engineer and board of university and school lands pursuant to this chapter and not belonging to other trust funds must be deposited in the strategic investment and improvements fund.

## 61-33-08. Advisory board - Responsibilities.

There is created a sovereign lands advisory board. The board's responsibility is to advise the state engineer and the board of university and school lands on general policies as well as specific projects, programs, and uses regarding sovereign lands. The board, being solely advisory, has no authority to require the state engineer or the board of university and school lands to implement or otherwise accept the board's recommendations.

## 61-33-09. Members of the board - Organization - Meetings.

- 1. The board consists of the manager of the Garrison Diversion Conservancy District, the state engineer, the commissioner of university and school lands, the director of the parks and recreation department, the director of the game and fish department, and the state health officer, or their representatives.
- 2. The state engineer is the board's secretary.
- The board shall meet at least once a year or at the call of the state engineer or two or more members of the board. The board shall meet at the office of the state engineer or at any other place decided upon by the board.
- 4. The board may adopt rules to govern its activities.

# (Contingent effective date - See note) Members of the board - Organization - Meetings.

- 1. The board consists of the manager of the Garrison Diversion Conservancy District, the state engineer, the commissioner of university and school lands, the director of the parks and recreation department, the director of the game and fish department, and the director of the department of environmental quality, or their representatives.
- 2. The state engineer is the board's secretary.
- 3. The board shall meet at least once a year or at the call of the state engineer or two or more members of the board. The board shall meet at the office of the state engineer or at any other place decided upon by the board.
- 4. The board may adopt rules to govern its activities.

#### 61-33-10. Penalty.

A person who violates this chapter or any rule implementing this chapter is guilty of a class B misdemeanor unless a lesser penalty is indicated. A civil penalty may be imposed by a court in a civil proceeding or by the state engineer through an adjudicative proceeding pursuant to chapter 28-32. The assessment of a civil penalty does not preclude the imposition of other sanctions authorized by law, this chapter, or rules adopted under this chapter. The state engineer may bring a civil action to recover damages resulting from violations and may also recover any costs incurred.

# CHAPTER 47-06 REAL ESTATE TITLE BY OCCUPANCY AND ACCESSION

# 47-06-01. Title by occupancy.

Occupancy for any period confers a title sufficient against all except the state and those who have title by prescription, accession, transfer, will, or succession.

# 47-06-02. Title by prescription - Occupancy required.

Occupancy for the period prescribed by any law of this state as sufficient to bar an action for the recovery of the property confers a title thereto, denominated a title by prescription, which is sufficient against all.

## 47-06-03. Title to real property - Adverse possession.

A title to real property, vested in any person who has been or hereafter shall be, either alone or including those under whom that person claims, in the actual open adverse and undisputed possession of the land under such title for a period of ten years and who, either alone or including those under whom that person claims, shall have paid all taxes and assessments legally levied thereon, shall be valid in law. Possession by a county under tax deed shall not be deemed adverse. A contract for deed shall constitute color of title within the meaning of this section from and after the execution of such contract

# 47-06-04. Fixtures - When tenant may remove.

When a person affixes that person's property to the land of another without an agreement permitting that person to remove it, the thing affixed belongs to the owner of the land, unless the owner of the land chooses to require the former to remove it. A tenant may remove from the demised premises, anytime during the continuance of the tenant's term, anything affixed thereto, for the purpose of trade, manufacture, ornament, or domestic use, if the removal can be effected without injury to the premises, unless the thing has become an integral part of the premises by the manner in which it is affixed. When any tenant upon agricultural land shall have built, erected, or placed upon such leased premises during the tenant's tenancy, any grain bin, granary, or structure for the purpose of housing grain, and no written agreement between the landlord and the tenant has been made as to its removal, the tenant may remove the same at any time within eight months after the termination of the tenant's lease and the vacating of said premises. The tenant shall not have said right of removal as against the owner or holder of any mortgage, deed, or conveyance which shall have been filed and recorded after the building. erection, or placing of such bin, granary, or structure, unless such tenant, within sixty days after such building, erecting, or placing, shall have filed in the office of the recorder a written notice describing the land, the character of the structure, and stating that the tenant intends to remove such structure as provided by law.

## 47-06-04.1. Mobile home storm shelters - Placement and transfer of ownership.

- Upon approval of the mobile home park owner, the owner of a mobile home located in the park may construct a storm shelter in the mobile home park. The approval must be in writing and must include the type, location, and use of the shelter, and an agreement between the park owner and the mobile home owner concerning ownership and maintenance of the shelter.
- 2. Notwithstanding section 47-06-04, the agreement between the owner of the mobile home and the park owner must provide that the owner of the mobile home is the owner of the shelter and may remove the shelter provided the land is returned to its original condition during any time that person owns the mobile home.
- 3. The shelter owner may transfer ownership of the shelter to either a person who purchases the mobile home or to the mobile home park owner. The transfer must be in writing; must include the type, location, and use of the shelter; must include the maintenance responsibilities of the parties; and must be signed by both parties. If a mobile home owner transfers the shelter to a purchaser of the mobile home, the terms

of the transfer must be the same as the terms of the agreement between the park owner and the mobile home owner required under subsection 1.

- a. If a suitable price cannot be agreed upon with the mobile home park owner, the shelter owner is deemed to have transferred the ownership and maintenance responsibilities of the shelter to the park owner without cost, unless the shelter is removed or the shelter is transferred to a purchaser of the mobile home as provided in this section.
- b. If the park owner is unwilling to assume ownership of the shelter, the park owner may require the mobile home owner to remove the shelter and return the land to its original condition.
- 4. The park owner is not liable for any injury or damages that may occur to the mobile home owner as a result of the installation or use of the mobile home storm shelter.
- 5. All shelters must meet with the approval of local governing bodies.

## 47-06-05. Riparian accretions.

Where from natural causes land forms by imperceptible degrees upon the bank of a river or stream, navigable or not navigable, either by accumulation of material or by the recession of the stream, such land belongs to the owner of the bank, subject to any existing right of way over the bank.

## 47-06-06. Avulsion - Title - Reclamation by original owner - Limitations.

If a river or stream, navigable or not navigable, carries away by sudden violence a considerable and distinguishable part of a bank and bears it to the opposite bank or to another part of the same bank, the owner of the part carried away may reclaim it within a year after the owner of the land to which it has been united takes possession thereof.

## 47-06-07. Ancient streambed taken by owners of new course as indemnity.

If a stream, navigable or not navigable, forms a new course abandoning its ancient bed, the owners of the land newly occupied take by way of indemnity the ancient bed abandoned, each in proportion to the land of which the owner has been deprived.

#### 47-06-08. Islands and relicted lands in navigable streams belong to state.

Islands and accumulations of land formed in the beds of streams which are navigable belong to the state, if there is no title or prescription to the contrary. The control and management, including the power to execute surface and mineral leases, of islands, relictions, and accumulations of land owned by the state of North Dakota in navigable streams and waters and the beds thereof, must be governed by chapter 61-33.

#### 47-06-09. Islands and relicted land in non-navigable streams.

An island or accumulation of land formed in a stream which is not navigable belongs to the owner of the shore on that side where the island or accumulation is formed, or if not formed on one side only, to the owners of the shore on the two sides, divided by an imaginary line drawn through the middle of the river.

#### 47-06-10. Island formed by dividing stream - Title.

If a stream, navigable or not navigable, in forming itself a new arm divides itself and surrounds land belonging to the owner of the shore and thereby forms an island, the island belongs to such owner.

The following is the basis for considering native hay land as above the ordinary high watermark.

In the 1999 ND Supreme Court case OHWM was defined as follows:

This Court has delineated factors for determining the ordinary high watermark:

"' "High-water mark" means what its language imports--a water mark. It is co-ordinate with the limit of the bed of the water; and that only is to be considered the bed which the water occupies sufficiently long and continuously to wrest it from vegetation, and destroy its value for agricultural purposes. \* \* \* In some places, however, where the banks are low and flat, the water does not impress on the soil any well-defined line of demarcation between the bed and the banks.

"'In such cases the effect of the water upon vegetation must be the principal test in determining the location of high-water mark as a line between the riparian owner and the public. It is the point up to which the presence and action of the water is so continuous as to destroy the value of the land for agricultural purposes by preventing the growth of vegetation, constituting what may be termed an ordinary agricultural crop.'"

43 CFR 2610.0-5 defines Ordinary Agricultural Crop as follows:

#### § 2610.0-5 Definitions.

As used in the regulations of this part:

- (a) Actual settler means a person who establishes a primary residence on the land.
- **(b)** Cultivation means tilling or otherwise preparing the land and keeping the ground in a state favorable for the growth of ordinary agricultural crops and requires irrigation as an attendant act.
- (c) Desert lands means unreclaimed lands which will not, without irrigation, produce any reasonably remunerative agricultural crop by usual means or methods of cultivation. This includes lands which will not, without irrigation, produce paying crops during a series of years, but on which crops can be successfully grown in alternate years by means of the so-called dry-farming system. Lands which produce native grasses sufficient in quantity, if ungrazed by grazing animals, to make an ordinary crop of hay in usual seasons, are not desert lands. Lands which will produce an agricultural crop of any kind without irrigation in amount sufficient to make the cultivation reasonably remunerative are not desert. Lands containing sufficient moisture to produce a natural growth of trees are not to be classed as desert lands.
- (d) Economic feasibility means the capability of an entry to provide an economic return to the settler sufficient to provide a viable farm enterprise and assure continued use of the land for farming purposes. Factors considered in determining feasibility may include the cost of developing or acquiring water, land reclamation costs, land treatment costs, the cost of construction or acquisition of a habitable residence, acquisition of farm equipment, fencing

and other costs associated with a farm enterprise, such as water delivery, seed, planting, fertilization, harvest, etc.

- (e) **Grant contract** means the contract between a State and the United States which sets the terms and conditions which the State or its assignees shall comply with before lands shall be patented.
- (f) Irrigation means the application of water to the land for the purpose of growing crops.
- (g) Ordinary agricultural crops means any agricultural product to which the land under consideration is generally adapted, and which would return a fair reward for the expense of producing them. Ordinary agricultural crops do not include forest products but may include orchards and other plants which cannot be grown on the land without irrigation and from which a profitable crop may be harvested.
- **(h)***Reclamation* means the establishment of works for conducting water in adequate volume and quantity to the land so as to render it available for distribution when needed for irrigation and cultivation.
- (i) Segregation means the action under the Act of August 19, 1894 (39 Stat. 422), as amended (43 U.S.C. 641), by which the lands are reserved from the public domain and closed to application or entry under the public land laws, including location under the mining laws.
- (j)Smallest legal subdivision means a quarter quarter section (40 acres).

# ARTICLE 89-10 SOVEREIGN LANDS

Chapter

89-10-01 Sovereign Lands

# **CHAPTER 89-10-01 SOVEREIGN LANDS**

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|               |  |

# 89-10-01-01. Authority.

These rules are adopted and promulgated by the state engineer under North Dakota Century Code chapter 61-33 to provide consistency in the administration and management of sovereign lands. These rules do not apply to the state of North Dakota's interests in oil, gas, and related hydrocarbons on sovereign lands.

History: Effective November 1, 1989; amended effective April 1, 2008; April 1, 2009; July 1, 2014.

General Authority: NDCC 28-32-02, 61-03-13

Law Implemented: NDCC 61-33

# 89-10-01-02. Prohibition on permanent relinquishment.

Sovereign lands may not be permanently relinquished, but must be held in perpetual trust for the benefit of the citizens of the state of North Dakota. All structures permitted or otherwise allowed for private use on sovereign lands are subordinate to public use and values.

History: Effective November 1, 1989; amended effective April 1, 2009; July 1, 2014.

General Authority: NDCC 28-32-02, 61-03-13

Law Implemented: NDCC 61-33

#### 89-10-01-03. Definitions.

The following definitions apply to this article:

- 1. "Authorization" means a permit, easement, lease, or management agreement approved and granted by the state engineer after application; and the authority granted in sections 89-10-01-10 and 89-10-01-19.
- 2. "Boardwalk" means a walk constructed of planking.
- 3. "Domestic use" means the use of water as defined by subsection 4 of North Dakota Century Code section 61-04-01.1.
- 4. "Grantee" means the person, including that person's assigns, successors, and agents who has authorization.
- 5. "Livestock" means bison, cattle, horses, mules, goats, sheep, and swine.
- 6. "Navigable waters" means any waters that were in fact navigable at the time of statehood, that is, were used or were susceptible of being used in their ordinary condition as highways for commerce over which trade and travel were or may have been conducted in the customary modes of trade on water.
- 7. "Ordinary high watermark" means that line below which the action of the water is frequent enough either to prevent the growth of vegetation or to restrict its growth to predominantly wetland species. Islands in navigable waters are considered to be below the ordinary high watermark in their entirety.
- 8. "Project" means any activity that occurs either partially or wholly on sovereign lands.
- 9. "Riparian owner" means a person who owns land adjacent to navigable waters or the person's authorized agent.
- 10. "Snagging and clearing" means the removal and disposal of fallen trees and associated debris encountered within and along the channel.
- 11. "Structure" means something that is formed from parts, including equipment, boat docks, boat ramps, and water intakes.
- 12. "Watercraft" means any device capable of being used as a means of transportation on waters.

History: Effective November 1, 1989; amended effective August 1, 1994; April 1, 2008; April 1, 2009;

April 1, 2010; July 1, 2014.

General Authority: NDCC 28-32-02, 61-03-13

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#### Overview

North Dakota Century Code, section 61-33.1-02, enacted by the legislature in 2017, governs mineral ownership of land inundated by the Pick-Sloan Missouri basin project dams:

The state sovereign land mineral ownership of the riverbed segments inundated by Pick-Sloan Missouri basin project dams extends only to the historical Missouri riverbed channel up to the ordinary high water mark. The state holds no claim or title to any minerals above the ordinary high water mark of the historical Missouri riverbed channel inundated by Pick-Sloan Missouri basin project dams, except for original grant lands acquired by the state under federal law and any minerals acquired by the state through purchase, foreclosure, or other written conveyance. Mineral ownership of the riverbed segments inundated by Pick-Sloan Missouri basin project dams which are located within the exterior boundaries of the Fort Berthold reservation and Standing Rock Indian reservation is controlled by other law and is excepted from this section.

Wilkinson v. Bd. of Univ. & Sch. Lands, 903 N.W.2d 51, 56–57 (N.D. 2017) (quoting 2017 N.D. Sess. Laws ch. 426, codified as N.D.C.C. § 61-33.1-02). The "historical Missouri riverbed channel" is statutorily defined as:

[T]he Missouri riverbed channel as it existed upon the closure of the Pick-Sloan Missouri basin project dams, and extends from the Garrison Dam to the southern border of sections 33 and 34, township 153 North, range 102 West which is the approximate location of river mile marker 1,565, and from the South Dakota border to river mile marker 1,303.

*Id.* at 57 (quoting N.D.C.C. § 61-33.1-01(2)). The legislature also provided a procedure for determining the ordinary high watermark of the historical Missouri riverbed channel:

1. The corps survey must be considered the presumptive determination of the ordinary high water mark of the historical Missouri riverbed channel, subject only to the review process under this section and judicial review as provided in this chapter.

- 2. Effective April 21, 2017, the department of mineral resources shall commence procurement to select a qualified engineering and surveying firm to conduct a review of the corps survey under this section. The review must be limited to the corps survey segments from the northern boundary of the Fort Berthold Indian reservation to the southern border of sections 33 and 34, township 153 north, range 102 west. Within ninety days of the first date of publication of the invitation, the department shall select and approve a firm for the review. The department may not select or approve a firm that has a conflict of interest in the outcome of the review, including any firm that has participated in a survey of the Missouri riverbed for the state or a state agency, or participated as a party or expert witness in any litigation regarding an assertion by the state of mineral ownership of the Missouri riverbed.
- 3. The selected and approved firm shall review the delineation of the ordinary high water mark of the corps survey segments. The review must determine whether clear and convincing evidence establishes that a portion of the corps survey does not reasonably reflect the ordinary high water mark of the historical Missouri riverbed channel under state law. The following parameters, historical data, materials, and applicable state laws must be considered in the review:
  - a. Aerial photography of the historical Missouri riverbed channel existing before the closure date of the Pick-Sloan project dams;
  - b. The historical records of the army corps of engineers pertaining to the corps survey;
  - c. Army corps of engineers and United States geological survey elevation and Missouri River flow data;
  - d. State case law regarding the identification of the point at which the presence of action of the water is so continuous as to destroy the value of the land for agricultural purposes, including hay lands. Land where the high and continuous presence of water has destroyed its value for agricultural purposes, including hay land, generally must be considered within the ordinary high water mark. The value for agricultural purposes is destroyed at the level where significant, major, and substantial terrestrial vegetation ends or ceases to grow. Lands having agricultural value capable of growing crops or hay,

- but not merely intermittent grazing or location of cattle, generally must be considered above the ordinary high water mark; and
- e. Subsection 3 of section 61-33-01 and section 47-06-05, which provide all accretions are presumed to be above the ordinary high water mark and are not sovereign lands. Accreted lands may be determined to be within the ordinary high water mark of the historical Missouri riverbed channel based on clear and convincing evidence. Areas of low-lying and flat lands where the ordinary high water mark may be impracticable to determine due to inconclusive aerial photography or inconclusive vegetation analysis must be presumed to be above the ordinary high water mark and owned by the riparian landowner.
- 4. The firm shall complete the review within six months of entering a contract with the department of mineral resources. The department may extend the time required to complete the review if the department deems an extension necessary.
- 5. Upon completion of the review, the firm shall provide its findings to the department. The findings must address each segment of the corps survey the firm reviewed and must include a recommendation to either maintain or adjust, modify, or correct the corps survey as the delineation of the ordinary high water mark for each segment. The firm may recommend an adjustment, modification, or correction to a segment of the corps survey only if clear and convincing evidence establishes the corps survey for that segment does not reasonably reflect the ordinary high water mark of the historical Missouri riverbed channel under state law.
- 6. The department shall publish notice of the review findings and a public hearing to be held on the findings. The public must have sixty days after publication of the notice to submit comments to the department. At the end of the sixty days, the department shall hold the public hearing on the review.
- 7. After the public hearing, the department, in consultation with the firm, shall consider all public comments, develop a final recommendation on each of the review findings, and deliver the final recommendations to the industrial commission, which may adopt or modify the recommendations. The industrial commission may modify a recommendation from the department only if it finds clear and convincing evidence from the resources in subsection 3 that the recommendation is substantially inaccurate. The industrial commission's

action on each finding will determine the delineation of the ordinary high water mark for the segment of the river addressed by the finding.

Id. (citing N.D.C.C. § 61-33.1-03).

An interested party seeking to bring an action challenging the review findings or recommendations or the industrial commission actions under this chapter shall commence an action in district court within two years of the date of adoption of the final review findings by the industrial commission. The plaintiff bringing an action under this section may challenge only the final review finding for the section or sections of land in which the plaintiff asserts an interest. The state and all owners of record of fee or leasehold estates or interests affected by the finding, recommendation, or industrial commission action challenged in the action under this section must be joined as parties to the action. A plaintiff or defendant claiming a boundary of the ordinary high water mark of the historical Missouri riverbed channel which varies from the boundary determined under this chapter bears the burden of establishing the variance by clear and convincing evidence based on evidence of the type required to be considered by the engineering and surveying firm under subsection 3 of section 61-33.1-03. Notwithstanding any other provision of law, an action brought in district court under this section is the sole remedy for challenging the final review, recommendations, and determination of the ordinary high water mark under this chapter, and preempts any right to rehearing, reconsideration, administrative appeal, or other form of civil action provided under law.

*Id.* (citing N.D.C.C. § 61-33.1-05). The North Dakota Supreme Court has already ruled that the delineation method outlined above applies retroactively to "all oil and gas wells spud after January 1, 2006, for purposes of oil and gas mineral and royalty ownership." *Id.* at 58.

Wenck Associates was selected by DMR as the qualified engineering and surveying firm qualified to conduct a review of the corps survey under this section. Wenck subcontracted with Rinke Noonan to provide the state case law referenced in section 61-33.1-03(3)(d). This memorandum describes the state case law pertaining to the delineation of the OHWM of the historical Missouri riverbed. Additionally, the memo provides a summary of our research into secondary legal jurisdictions that have discussed or commented on the appropriate methodology for determining an OHWM.

#### North Dakota Case Law

The following is a summary of North Dakota cases regarding the law of OHWM relevant to the validity of the method for determining the OHWM:

1. Rutten v. State, 93 N.W.2d 796 (N.D. 1958).

Rutten is the earliest found case in North Dakota where the state Supreme Court cites the test for determining the OHWM as first finding the location where a well-defined line shows the difference between the bed and the bank and then, in areas where the bank is low and flat, look to the change in vegetation where ordinary agricultural crops cannot grow:

'High-water mark' means what its language imports—a water mark. It is co-ordinate with the limit of the bed of the water, and that only is to be considered the bed which the water occupies sufficiently long and continuously to wrest it from vegetation, and destroy its value for agricultural purposes . . . . In some places, however, where the banks are low and flat, the water does not impress on the soil any well-defined line of demarcation between the bed and the banks.

In such cases the effect of the water upon vegetation must be the principal test in determining the location of high-water mark as a line between the riparian owner and the public. It is the point up to which the presence and action of the water is so continuous as to destroy the value of the land for agricultural purposes by preventing the growth of vegetation, constituting what may be termed an ordinary agricultural crop.

93 N.W.2d at 799. (quoting *Tilden v. Smith*, 113 So. 708 (Fla. 1927) & citing 56 <u>Am. Jur.</u>, *Waters*, § 57; C.J., *Waters*, Ch. IV; 93 C.J.S. *Waters* § 103; 9 C.J., *Boundaries*, § 74; 11 C.J.S. *Boundaries* § 32; 45 C.J., *Navigable Waters*, § 191; 65 C.J.S. *Navigable Waters* § 81; *Anderson v. Ray*, 156 N.W. 591 (S.D. 1916).

# 2. State ex rel. Sprynczynatyk v. Mills, 592 N.W.2d 591 (N.D. 1999).

Plaintiffs appealed from a judgement determining the OHWM of the Missouri River. *Sprynczynatyk*, 592 N.W.2d at 592. The North Dakota Supreme Court held that the trial court did not err in determining the OHWM based upon the current condition of the river. *Id.* The Court ruled that the OHWM is ambulatory, and is not determined as of a fixed date. *Id.* (citing *In re Ownership of the Bed of Devils Lake*, 423 N.W.2d 141, 143–44 (N.D. 1988).

The determination of the OHWM "is a finding of fact, reviewable on appeal under the 'clearly erroneous' standard of N.D. R. Civ. P. 52(a)." *Id.* at 594 (citing *U.S. v. Southern Inv. Co.*, 876 F.2d 606, 611 (8th Cir. 1989)). "A finding of fact is clearly erroneous only if it is induced by an erroneous view of the law, if no evidence exists to support it, or if, upon review of the entire evidence, we are left with a definite and firm conviction that a mistake has been made." *Id.* (citing *Wachter Development, L.L.C. v. Gomke*, 579 N.W.2d 209 (N.D. 1998)).

For delineating the OHWM, the Court cited to factors listed in *In re Ownership of the Bed of Devils Lake* from the case *Rutten v. State*:

'High-water mark' means what its language imports—a water mark. It is co-ordinate with the limit of the bed of the water; and that only is to be considered the bed which the water occupies sufficiently long and continuously to wrest it from vegetation, and destroy its value for agricultural purposes . . . . In some places, however, where

the banks are low and flat, the water does not impress on the soil any well-defined line of demarcation between the bed and the banks.

In such cases the effect of the water upon vegetation must be the principal test in determining the location of high-water mark as a line between the riparian owner and the public. It is the point up to which the presence and action of the water is so continuous as to destroy the value of the land for agricultural purposes by preventing the growth of vegetation, constituting what may be termed an ordinary agricultural crop.

Id. (citing 423 N.W.2d at 144–45 (quoting Rutten v. State, 93 N.W.2d 796, 79 (N.D. 1958))).

While the delineation of the OHWM was based on existing conditions, and not a historical review, the Court upheld the trial court's decision based on evidence presented by the State in the record that there was a "well-defined, obvious embankment where the water reaches its highest point, at the western edge of Riverwood Drive." *Id.* In addition, expert testimony in the record showed the "soil and vegetation change dramatically at that point." *Id.* 

# 3. In re Ownership of Bed of Devils Lake, 423 N.W.2d 141 (N.D. 1988).

The State appealed a finding concerning the ownership of the bed of Devils Lake. The trial court found that expert opinions "indicate that the ordinary high water mark of Devils Lake at statehood was approximately 1,426 feet above mean sea level." *In re Ownership of Bed of Devils Lake*, 423 N.W.2d at 142.

On review, the North Dakota Supreme Court commented on the evidence considered by the trial court as a basis for upholding the trial court's findings as to the OHWM of Devils Lake:

In this case, however, evidence was introduced to show an ordinary high water mark. There was expert testimony that 'based upon vegetation lines and strand lines' an ordinary high water mark is determinable; that the boundary of Devils Lake is 'an ambulatory boundary;' that there is a 'major change at the shoreline' at 1,426.2 feet above mean sea level; that there is a significant strand line at 1,426 feet; that the best evidence of long-term stability is at a level of 1,423 to 1,426 feet above mean sea level; and that there are no trees below 1,423 feet and there are fifty to sixty year-old trees in the area of 1,426 feet. In our view the evidence of an ordinary high water mark at an elevation of 1,426 feet above mean sea level is sufficient to establish an ordinary high water mark at that level and to warrant application of the doctrine of reliction. The evidence of fifty to sixty year-old trees at an elevation of 1,426 feet is particularly persuasive.

*Id.* at 145.

# IN DISTRICT COURT, BURLEIGH COUNTY, STATE OF NORTH DAKOTA

State of North Dakota, ex rel David Spryncznatyk, North Dakota State Engineer, Plaintiff

Memorandum Decision & Order Civil No. 91-C-1669

Vs.

William R. Mills, etal.,

Defendants

The trial of this case was heard on the 3rd day of February, 1998 in Bismarck, ND. The plaintiff was represented by Mr. Charles Carvell, Assistant Attorney General for the State of North Dakota, and the defendant appeared pro se on behalf of himself and the other named defendants, which are family members or business entities of the defendant.

The litigation has been pending for many years. This court issued summary judgment pursuant to Rule 56 of the North Dakota Rules of Civil Procedure, holding the State of North Dakota was the absolute owner of the land between the ordinary high water mark and the ordinary low water mark, otherwise described as the "shore zone". The defendants appealed that ruling to the North Dakota Supreme Court, and that court reversed, holding that neither party held absolute ownership of the shore zone, and remanded the case to the this court for further proceedings in accorance with the mandate. State of North Dakota ex rel David Spryncznatyk, North Dakota State Engineer v. William R. Mills, etal. 523 NW2d 537 (ND 1994).

After a pretrial conference, the issues were narrowed to just one for the court to

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determine: what is the ordinary high water mark on the property in question? The issue is ripe for determination because the shore zone must be established in order to determine the correlative rights of the parties therein, and there is disagreement between the parties as to the location of this mark.

The defendant's position has always been that he owns absolutely to the low water mark in accordance with the dictates of NDCC section 47-01-15. That contention, however, was rejected by the North Dakota Supreme Court, holding that NDCC section 47-01-15 was a rule of construction, and was not, in itself, a grant of ownership to the riparian owner. Id. at 542.

The defendant has also argued that the pre-Garrison Dam water flows and stream bed locations should be used in determining what the ordinary high water mark is at this time. However, the court ruled in a pre-trial motion proceeding that the relevant time frame would be the post-dam period since the building of the dam has so significantly changed the nature of the river's flows and shifting bed that it would be virtually impossible to reconstruct the ordinary high water mark based on "natural conditions" that are gone forever. The determination of the ordinary high water mark, as presently constituted, can only be determined on the basis of present conditions, whether or not such conditions have been altered by man-made structures. See J.P. Furlong Enterprises, Inc. V. Sun Exploration & Production Co., 423 NW2d 130 (ND 1988). Furthermore, the ordinary high water mark may again change over time, due to natural and artificial occurrences. To limit, or freeze, the ordinary high water mark to a point sometime in the past would be unrealistic and impracticable. This position has been rejected by the North Dakota Supreme Court in the case of In Re Ownership of the Bed of Devils Lake, 423 NW2d 141 (ND 1988). The mark is ambulatory.

The defendant also advanced the argument that the land in question constitutes accretion to his land, and is considered above the ordinary high water mark pursuant to NDCC section 61-33-01(3). That section, however, applies to accretions pursuant to NDCC section 47-06-05. That section provides that:

"Where from natural causes land forms by imperceptible degrees

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24 25 upon the bank of a river or stream, navigable or not navigable, either by accumulation of material or by the recession of the stream, such land belongs to the owner of the bank, subject to to any existing right of way over the bank."

There are two requirements that must be met in order for defendant to be successful in his argument. First, the accretion must be from "natural causes"; and second, it must form upon the "bank" of the river.

At the time of trial, there was no evidence presented by the defendant to the effect that the land in question was an accretion, or that it had formed by natural causes. To the contrary, the evidence suggests that to the extent that the land has accreted, temporarily or otherwise, it is due in large part to the dumping of debris at the north end of the property, apparently the result of defendants' building activities elsewhere in the immediate area. Also, there is no proof that the land at issue has formed on the bank of the river. That is precisely the issue in this litigation. It is a settled principle of law that to establish title to accretions, the claimant must show that said accretions were formed by deposits against the highland. 78 AmJur2d, Waters, section 408. See also Hogue v. Bourgois, 71 NW2d 47 (ND 1955), holding that the state is the owner of accretions to islands located in the bed of the river. Hence, just because a piece of property may constitute an accretion, it does not necessarily mean that it is attached to the bank or the highland. The court concludes that NDCC section 61-33-01(3), cannot be interpreted to give defendant title to the disputed land simply because it may constitute an accretion. The said statute was never intended to change the law as it relates to the State of North Dakota's interest in sovereign lands as it existed before the adoption of the amendment to the statute in 1991 (see H.B. 1471), which added the provision concerning accretions. The amendment was simply for the purpose of assuring landowners who were occupying and farming accreted land that the state was not making a claim to their property-land that had clearly been added to the bank by natural causes and was above the high water mark. That amendment cannot be construed as an attempt by the legislature to give away its sovereign interest in the lands which lie below the ordinary high water mark.

Part of the difficulty caused in this area is due to the nature of accretions. In the

Missouri River near Bismarck, the riverbank undulates over time. Sandbars migrate downstream, sometimes attaching to the highland, sometimes not. Usually, and by definition, accretion happens imperceptibly. It is a natural process that any river experiences over time, but until the accretion rises above the ordinary high water mark, the title does not vest in the riparian owner. Borough of Ford City v. United States, 345 F.2d 645 (3rd Cir. 1965); Nelson v. Stratbucker, 325 NW2d 391 (Iowa 1982).

This court must determine the location of the ordinary high water mark. This determination will declare the boundary of the bank, or upland, and declare the rights of the parties to that extent. There is no other issue before the court at this time, although there was a preliminary decision that the issue of mineral rights in the shore zone would also be decided in this litigation. The court later held, at the final pre trial conference, that the additional issue of mineral rights was not ripe for determination, nor any other correlative rights of the parties in the shore zone. The only issue ready for inquiry based on the pleadings and pretrial proceedings is the location of the ordinary high water mark on the property affected by the litigation, namely:

Tracts 1A, 1B, and 1C, platted as parts of Sections 7 and 8 of Township 138 N., R. 80 W. of the 5th P.M., contained in the Plat received in evidence as Plaintiff's Exhibit 4, and otherwise known as a portion of Southport Addition to the City of Bismarck, ND.

The plaintiff presented testimony from Cary Backstrand, David Wroblewski, Mike Brand and Don Peterson, together with exhibits 1 through 6. The defendant presented testimoney from Russell Harkness and exhibits 7 through 15, together with the transcript from the motions hearing held on October 24, 1996(item 109 in the file), appellant's responsive brief dated July 3, 1997(item 114 in the file), defendant's brief with attachments filed March 31, 1997(item 108 in the file), defendant's brief dated June 23, 1997(item 110 in the file), and defendant's responses to plaintiff's interrogatories, set 2, with attachments. The latter items offered by the defendant from the file do not contain evidence per se, but are in the nature of argument. The material is mostly duplicates of

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information already contained in defendants' exhibits.

Essentially, the defendant contends that the pre-dam flows of 20,000 cfs should determine the ordinary high water mark, and that would translate into a figure of 1624 feet at the Bismarck gage. See defendant's exhibit 11. The ordinary high water mark cannot be established by "average flows", or a point on the gage at any given place. The Missouri river has changed its channel over the years in this area, subjecting the banks to erosion and accretion. The current course of the channel cannot be predicated on what the predam flows might have "averaged". There is absolutely no evidence that the channel of the river would be different today if the Garrison Dam had not been built. It is just as reasonable to assume that the moody channel would have experienced more severe swings, and that areas subjected to frequent flooding would have been much greater than is currently seen. The problem with defendant's argument is that it is not supported by the evidence, has no relevance to determining ordinary high water mark at this time under federal and state standards, and fails to establish any geographical reference for the court. This litigation has been pending for 7 years. The defendant has had ample opportunity to support his theories with evidence, but the evidence is missing, and in its place is a litany about "bank robbery" by the federal and state authorities. Defendant may have a cause of action under theories of inverse condemnation, but that is not the focus of this action.

In defendants' exhibit 11, there is a portion of the federal code of regulations dealing with the definition of "ordinary high water mark". It is contained in 33 CFR 323.2(f):

"The term 'ordinary high water mark' means that the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed upon the bank; shelving; changes in the character of the soil; destruction of terrestial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas."

North Dakota has a definition of "ordinary high water mark" found in the case of Rutten v. State, 93 NW2d 796,799 (ND 1958):

"High-water mark means what its language imports--a water mark. It is co-ordinate with the limit of the bed of the water; and that only is to be considered the bed which the water occupies sufficiently long and continuous to wrest it from vegetation, and destoy its value for agricultural purposes...In some places, however, where the banks are low and flat, the water does not impress on the soil any well-defined line of demarcation between the bed and the banks.

"In such cases the effect of the water upon vegetation must be the principal test in determining the location of high-water as a line between the riparian owner and the public. It is the point up to which the presence and action of the water is so continuous as to destroy the value of the land for agricultural purposes by preventing the growth of vegetation, constituting what may be termed an ordinary agricultural crop."

The plaintiff has the burden of proof. As noted above, the plaintiff presented witnesses and exhibits to support its contentions. First, Mr. Cary Backstrand testified. He has been a registered engineer for the North Dakota State Water Commission since 1979. He testified that the ordinary high water mark on the property in issue is located on the west edge of Riverwood Drive, which is a generally north-south roadway adjacent to the golf course. Tracts IA, 1B, and 1C constitute about 62 acres, more or less, as shown in plaintiff's exhibit 4.

Backstrand testified that the area to the west of Riverwood Drive has flooded from time to time, and has also been dry periodically. The sandbar on the north end of the property closed in the 1970's. No crops have been grown on the property, although hay was harvested once in the 1990's. He testified that sometimes the land is wet all year, and that has been the case since 1995.

He went to testify that the area has not changed significantly since 1968, and he based this on his observations personally and also photographs that have been taken over

the years.

His opinion that the ordinary high water mark was located on the west edge of Riverwood Drive was based on the shelf that starts at that point, with the land rising 4-6 feet at that point, creating a shelf to the east. He also based his opinion on the sandy nature of the soil; the aquatic type vegetation that grows there, which is typical of a wetland shore zone; the change in vegetation to the east, where upland plants take hold; the lack of crops grown there; and the fact that it was customary for the water to reach that height.

Next, Mr David Wroblewski testified. Mr. Wroblewski is a soils expert and a consultant. He testified concerning a soils survey that he conducted on the property in August 1995. He said that the soils were poorly drained, and soil stratification was indicative of frequent flooding. The majority of the soils were in classes 7 and 8. Class 1 is the best type of soil, and class 8 is the worst. The ratings were assigned by Wroblewski to the property primarily on the basis of the wetness, and the inability to use the land for any productive purpose. The golf course to the east contains good soil, and he termed this area the "terrace". Soil there would be classified as 3 or 4, and usable for cropland. On the other hand, the property at issue was classified as a "floodplain".

Next, Mr. Mike Brand testified for the plaintiff. He is with the North Dakota Land Department, and his duties include the identification of boundaries. He has an expertise in determining the ordinary high water mark on properties since this mark constitutes the boundary between the riparian owner and the state's sovereign interest in the riverbed. He prepared a comprehensive report, which was received in evidence as plaintiff's exhibit 6. The report contains a number of photographs that are particularly helpful in showing the land in a somewhat dry condition, and the same property during high water.

It was Brand's opinion that the ordinary high water mark was on the western edge of Riverwood Drive. The property to the west of Riverwood Drive was characterized by gray soils, which are commonly found in flooded areas. The water table was very close to the surface (within a foot or so), and the only area that supported grasses that were at least baled during one season (as evidenced by an old hay bale) was located close to

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Riverwood Drive. The vegetation in the area was predominantly a wetlands type. The land flooded frequently.

Brand also testified that the north end of the sand bar completed the closing process in 1984 by reason of the rubble pile that was placed there. Hence, the process of accretion was aided significantly by man made conditions.

Don Peterson, a banker-farmer-agricultural extension agent, testified that the land was not reliable or useful for agriculture. Even fencing would be difficult to install and maintain. The saturated soil would make it difficult for cattle to walk on it and the usual pasture grasses usable for grazing would not grow on the property. Cattle would suffer foot rot from walking on the wet ground. Row crops would not grow in this environment, and the property could not be included in a farm plan for purposes of obtaining credit. He concluded that the land west of Riverwood Drive was not useable for agricultural purposes.

The court finds that from the aerial photographs, the ordinary high water mark can also be observed. That point follows the western edge of Riverwood Drive. The aquatic vegetation predominates below that line, and the land rises about 5 feet at the point, and to the east, upland type vegetation and the tree line starts. The land to the west of Riverwood Drive cannot be used for agricultural purposes, and is especially unsuited for any ordinary crop. The preponderance of the evidence supports the plaintiff's contention that the land is not even useful for grazing purposes. No crops can be grown, and the land has no economic usefulness in forming a farm plan for agricltural credit purposes. "Crops" must be considered as those other than an occasional use for having. The evidence indicates that the area immediately adjacent to Riverwood Drive on the west side was haved one year, but that alone would not suffice to change the result. The term "ordinary agricultural crop" used in Rutten v. State, 93 NW2d 796 (ND 1958), requires a greater showing. The Idaho courts have held that the land's usefulness for livestock is not determinative of the issue. But the evidence in this case is that the land is not even useful for grazing, and the one instance of having a small portion of the easternmost portion of the property is not sufficient to establish its use for that purpose. Don Peterson's

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testimony in this regard was particularly relevant.

The defendants' evidence centers around statistical data, as idicated above. Mills argues that the ordinary flow of the river. pre-dam, is about 20,000 cfs, and that the river level at that flow would equal 1,624 feet elevation at the Bismarck gage. See defendants' exhibit 11. But the use of statistics is not useful in determining ordinary high water mark locations, using either the federal test, cited by the defendants, or the standard set forth in Rutten v. State, infra. The Rutten court held that statistical evidence as to the height of water during different years, without knowing the mark left on the soil, or their elevations, is not useful in determining the location of the ordinary high water mark, which is the line the water "impresses on the soil as the limits of its dominion." Id. at 799.

Such is the case here. The defendant's evidence is not persuasive and does not overcome the evidence submitted by the plaintiff.

The court therefore finds that the ordinary high water mark on the property in issue is the western edge of Riverwood Drive located in Bismarck, North Dakota

IT IS SO ORDERED. Counsel for plaintiff shall draft the necessary findings of fact, conclusions of law, order for judgment and judgment to conform with this memorandum decision

Dated this 16th day of March, 1998

BY THE COURT:

Bruce E. Bohlman, District Judge

cc: Charles Carvell William Mills

| STATE  | OF  | NORTH  | DAKOTA |
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# IN DISTRICT COURT SOUTH CENTRAL JUDICIAL DISTRICT

| COCKIT OF DOMESTICE   | SOUTH OBIVIEWE CONTINUE DISTINCT                                  |  |
|---|---|--|
| State of North Dakota ex rel. ) David Sprynczynatyk, North ) Dakota State Engineer, ) |   |  |
| Plaintiff, )  | FINDINGS OF FACT,<br>CONCLUSIONS OF LAW<br>AND ORDER FOR JUDGMENT |  |
| William R. Mills, et al.,   | Civil No. 91-C-1669   |  |
| Defendants. )   |   |  |
|   |   |  |

Upon consideration of the evidence presented at the February 3, 1998, trial, and the arguments of the parties, the court makes the following:

# FINDINGS OF FACT

- 1. At issue is the location of the ordinary high watermark on the land in question.
- 2. Neither Plaintiff nor Defendants gave a metes and bounds description of the land in dispute. Exhibit 4, however, adequately describes the land for the purposes of this litigation. It is, as depicted on Exhibit 4, Tracts 1A, 1B, and 1C. Tract 1A is in the NE½ of Section 7, Township 138 North, Range 80 West. Tracts 1B and 1C are in the NW½ of Section 8, Township 138 North, Range 80 West. All three tracts are in Burleigh County and lie just south of Bismarck/Mandan's Expressway Bridge. They comprise about 62 acres, more or less.
- 3. Tract 1C comprises the most eastern portion of the land and it is adjacent to a road known as Riverwood Drive. To the east of this road is Riverwood Golf Course.
- 4. Defendants contend that the land is above the ordinary high watermark because it is accreted land, relying upon N.D.C.C. § 61-33-01(3), which RECEIVED & FILED also refers to relicted land. While land west of the revetment that runs through MAR 3 0 1998

about the middle of the property may have had its origins as accretion, it formed on the bed of the Missouri River as an island. It did not form on the river bank. Furthermore, the dumping of debris by Defendants in this area contributed in no small measure to the creation of this land. As for land east of the revetment, Defendants failed to present any evidence on the manner in which it was created. Even if it is accretion, Defendants failed to present any evidence whether it is accretion to the bed of the river or to the bank of the river.

- 5. Defendants assert that the ordinary high watermark of the Missouri River prior to closure of Garrison Dam was 20,000 cubic feet per second (cfs) and that such a flow places the ordinary high watermark at an elevation of 1,624 feet. The court has previously ruled that the ordinary high watermark is to be determined as it exists today and not as it may have existed before the presence of Garrison Dam. Thus, Defendants' position is inconsistent with the law of the case. Furthermore, there are serious factual problems with Defendants' position.
- 6. Defendants did not present an elevation survey of the land. Consequently, just where elevation 1,624 may be on the land is unknown.
- 7. Defendants failed to even prove how the 20,000 cfs benchmark was established and how it is tied to the 1,624 elevation. They made statements about such matters but offered no proof to substantiate them.
- 8. Defendants' stream flow data and elevation data, standing alone, do not aid determining location of the ordinary high watermark, which is defined by agricultural usefulness.
- 9. Plaintiff did present evidence on the location of the ordinary high watermark, and that evidence is substantial and persuasive. Plaintiff places the ordinary high watermark mark at the base of Riverwood Drive. The court agrees.

- 10. The land in dispute is low and flat. It is flooded each winter. It is subject to frequent flooding during other seasons. In fact, the land has been flooded continuously since the autumn of 1995, over two years. As a result of frequent flooding, its proximity to the flowing river, and the fact it is low and flat, the land has a high water table.
- 11. Witnesses with expertise in locating the boundary between the beds of navigable bodies of water and uplands place the ordinary high watermark at the base of the road that separates the land from the golf course.
- 12. The land has never been used as crop land. It has never been used as pasture land. It is not feasible to fence the land, and even if it were fenced, it is not healthy for livestock to be in an area with soils that are often saturated.
- 13. Although the land has been in existence for at least thirty years, only one occasion was identified on which the land was used as hay land. On that occasion at least some of the hay bales were not even removed.
- 14. The soil of the land is poorly drained and its stratification indicates frequent flooding, as does the gray color of the soil. Applying the standard soils classification system, the soils are "7" and "8," making them the poorest land possible for agricultural purposes. Soils just beyond this land, in the golf course, are useful for all agricultural purposes, including crop land. This abrupt change in soils helps to locate the ordinary high watermark.
- 15. Vegetation on the land is predominantly aquatic. At the road the vegetation abruptly changes from aquatic to upland species, also helping to identify the ordinary high watermark.
- 16. At the road, the elevation of the land makes a marked change, rising four to six feet. This is the riverbank.

- 17. There was persuasive testimony from an agricultural expert that the land is not useful for any agricultural purpose. This unreliability for any agricultural purpose prohibits it from being included in a farm management plan and used as security for farm credit.
- 18. Finally, aerial photos of the land and the areas adjoining it to the north and the south, make apparent, even to the layperson, the location or the ordinary high watermark. The tree line of the river valley forest identifies the ordinary high watermark. Along the tree line there is a clear change in the characteristics of the land.
- 19. The Missouri River has so effected the land in dispute, and continues to do so, that this land is still part of the bed of the river. The riverbank, the ordinary high watermark, is at the western edge of Riverwood Drive, the road bordering the property.

#### CONCLUSIONS OF LAW

1. While N.D.C.C. § 61-33-01(3) refers to accreted and relicted land, it does not award to or confirm in riparian landowners title of all accreted and relicted land. It confirms riparian title to land that has formed on the bank of a river. Defendants failed to present any evidence on how the land in dispute here was created. And even if it is assumed that the land is either accreted or relicted land, Defendants failed to present any evidence whether it formed on the riverbank. Having failed to make such proof, Defendants cannot rely upon N.D.C.C. § 61-33-01(3) to locate the ordinary high watermark.

2. The ordinary high watermark is defined by the agricultural usefulness test. Stream flow data and water elevation data standing alone are not helpful in determining the agricultural usefulness of land.

3. The land here does not have any agricultural usefulness. It cannot be used to grow crops. It cannot be used as pasture. It cannot with any degree of reliability or consistency be used as hay land.

4. The ordinary high watermark of the land is at the base or western most edge of Riverwood Drive, a road marking the eastern boundary of the land.

## ORDER FOR JUDGMENT

# IT IS HEREBY ORDERED:

1. On the land in question, that is, Tracts 1A, 1B, and 1C, as depicted on Exhibit No. 4, lying in Sections 7 and 8, Township 138 North, Range 80 West, Burleigh County, containing about 62 acres, more or less, the ordinary high watermark is located at the base or western most edge of Riverwood Drive, a road marking the eastern boundary of the land.

No costs are awarded.

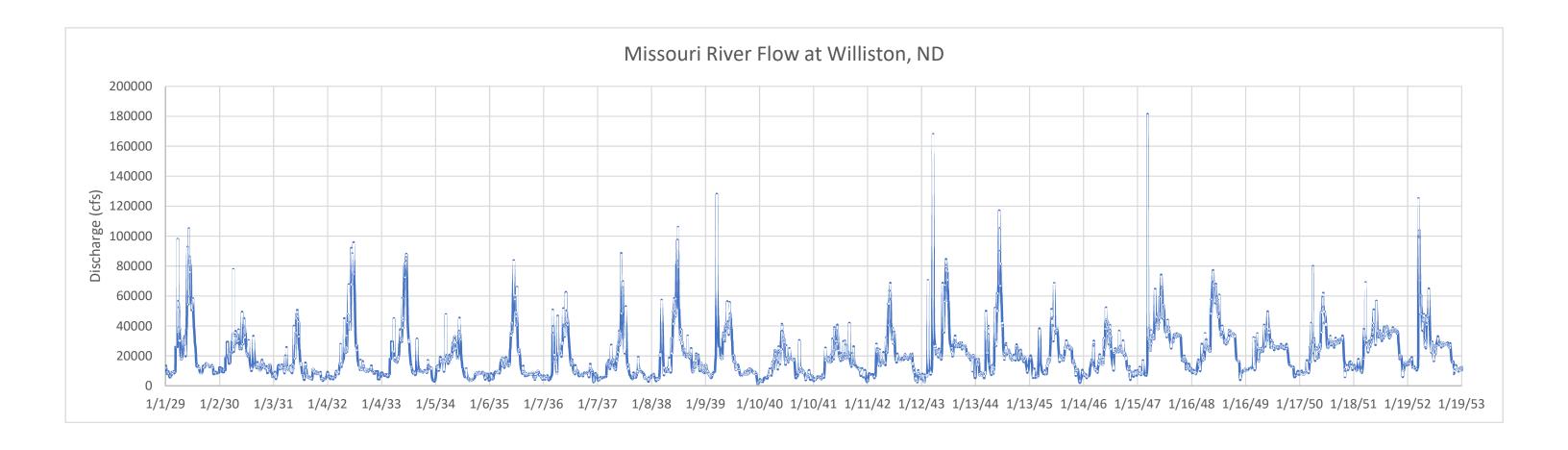
LET JUDGMENT BE ENTERED ACCORDINGLY.

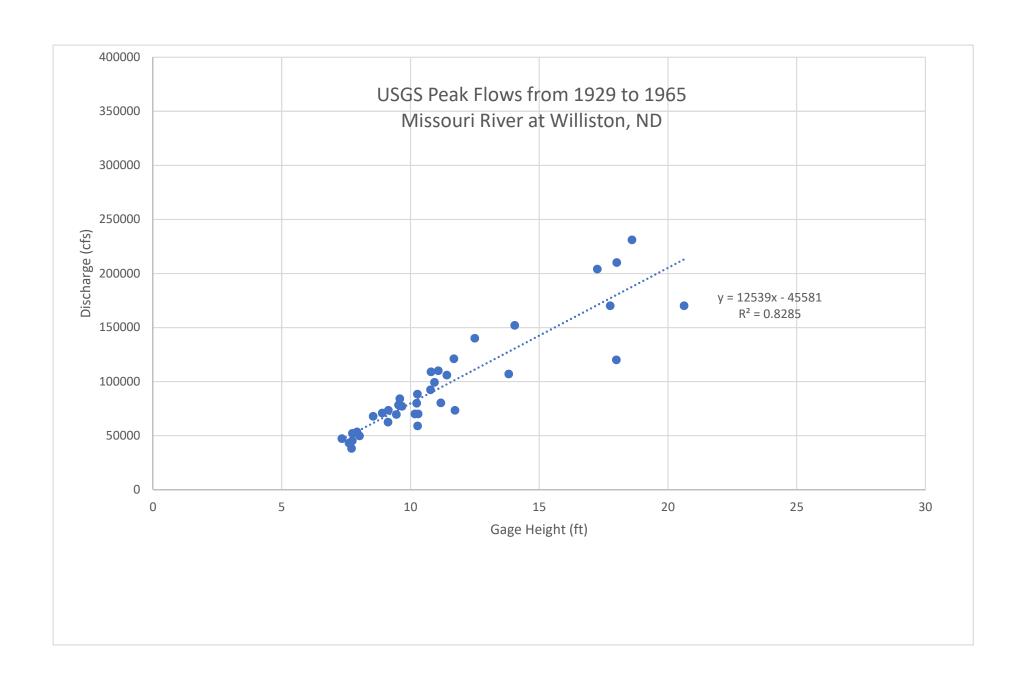
Dated this <u>247</u> day of March, 1998.

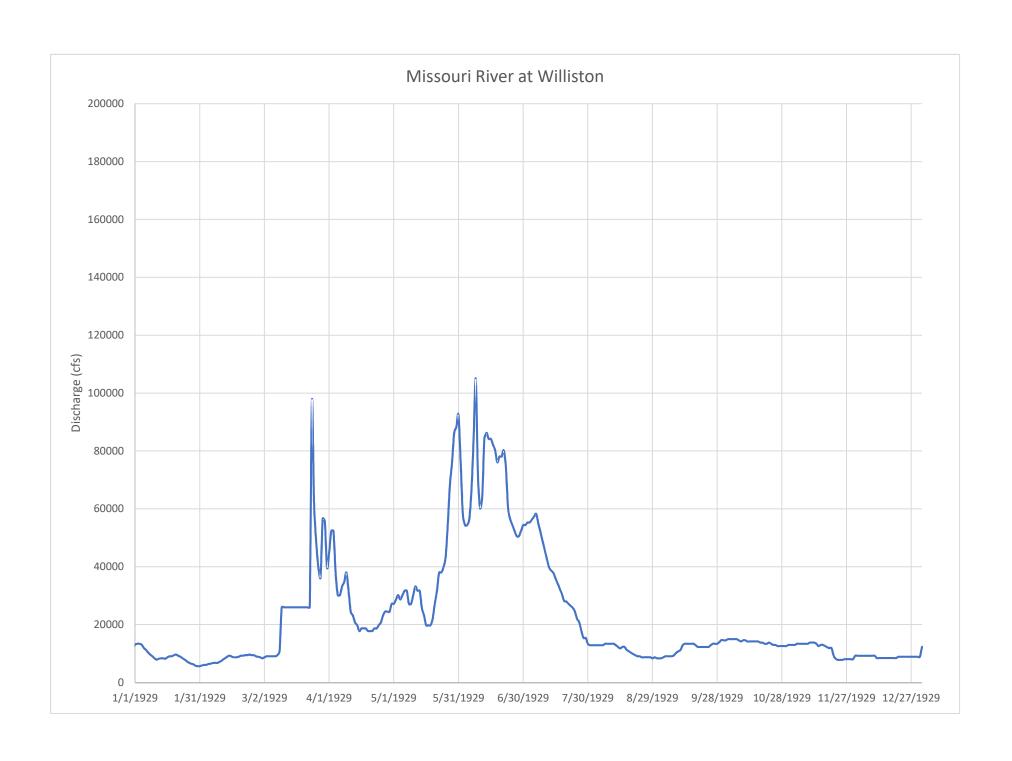
BY THE COURT

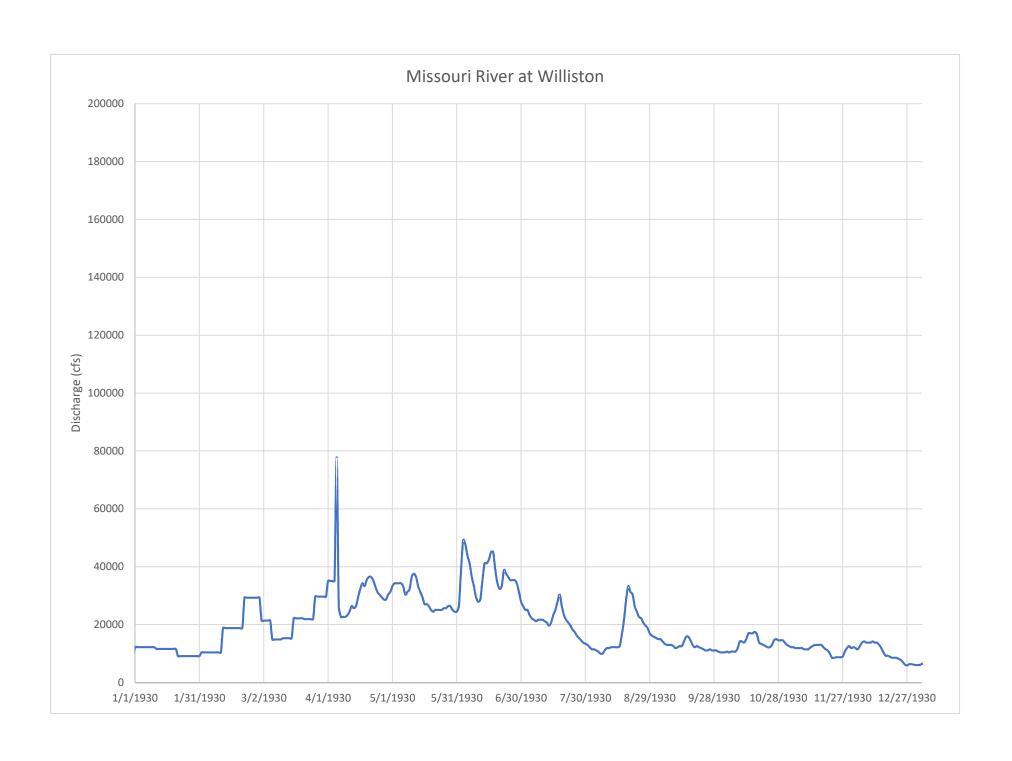
Bruce Bohlman, District Judge

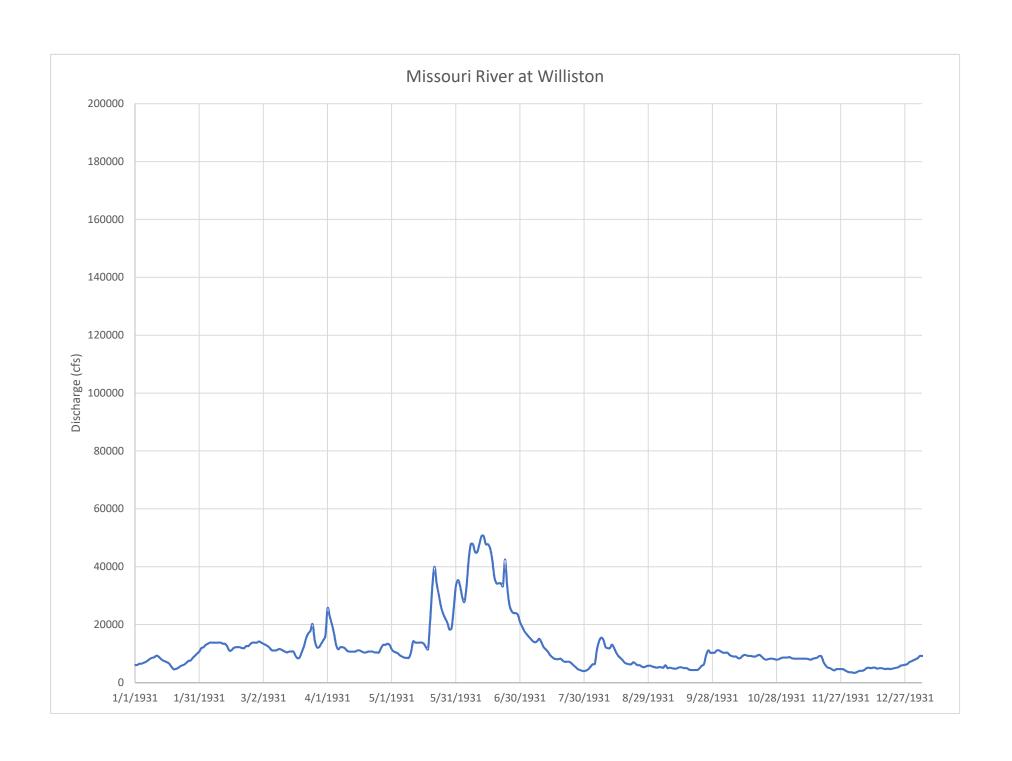
USGS Data (Flow Records)

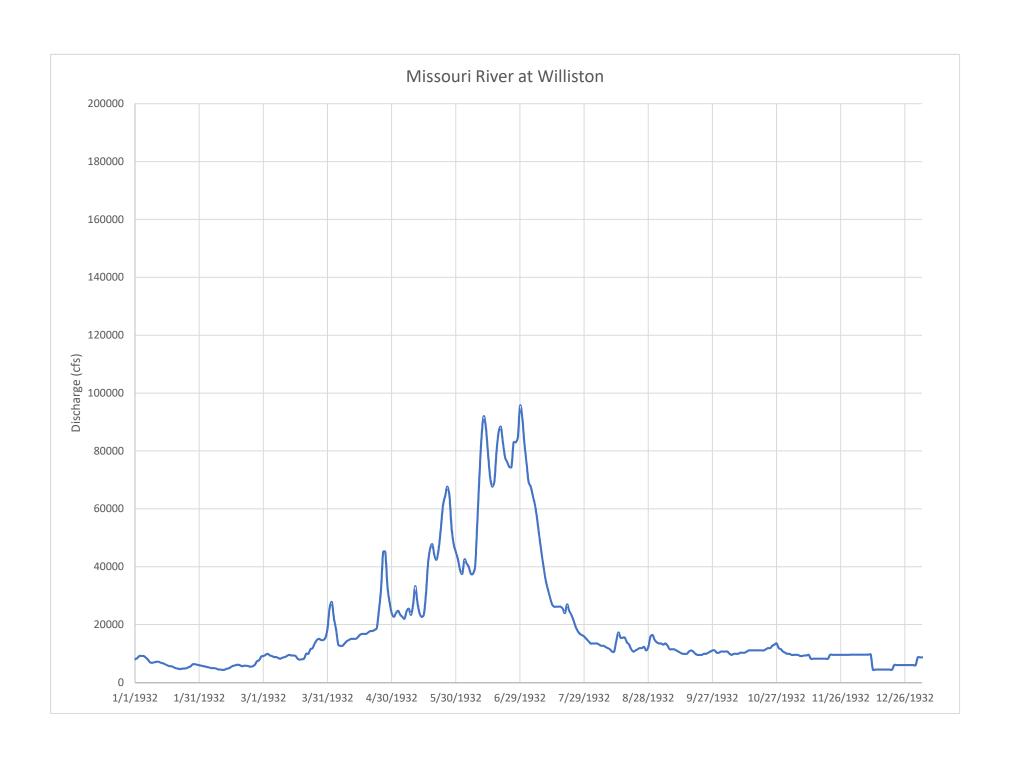


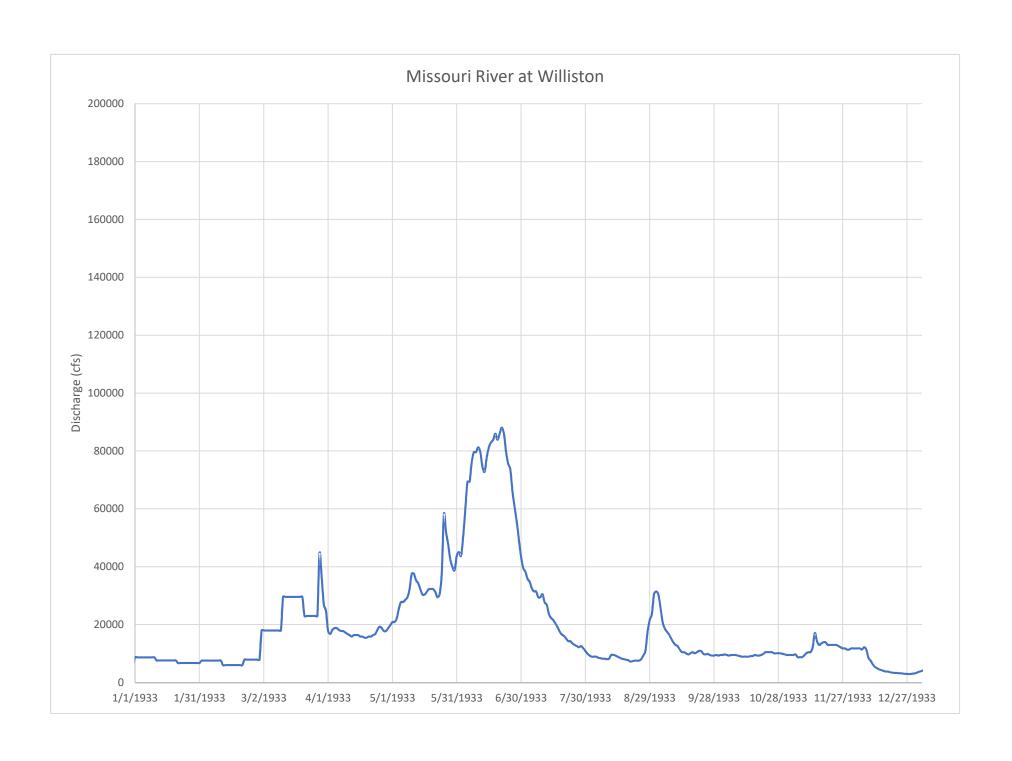


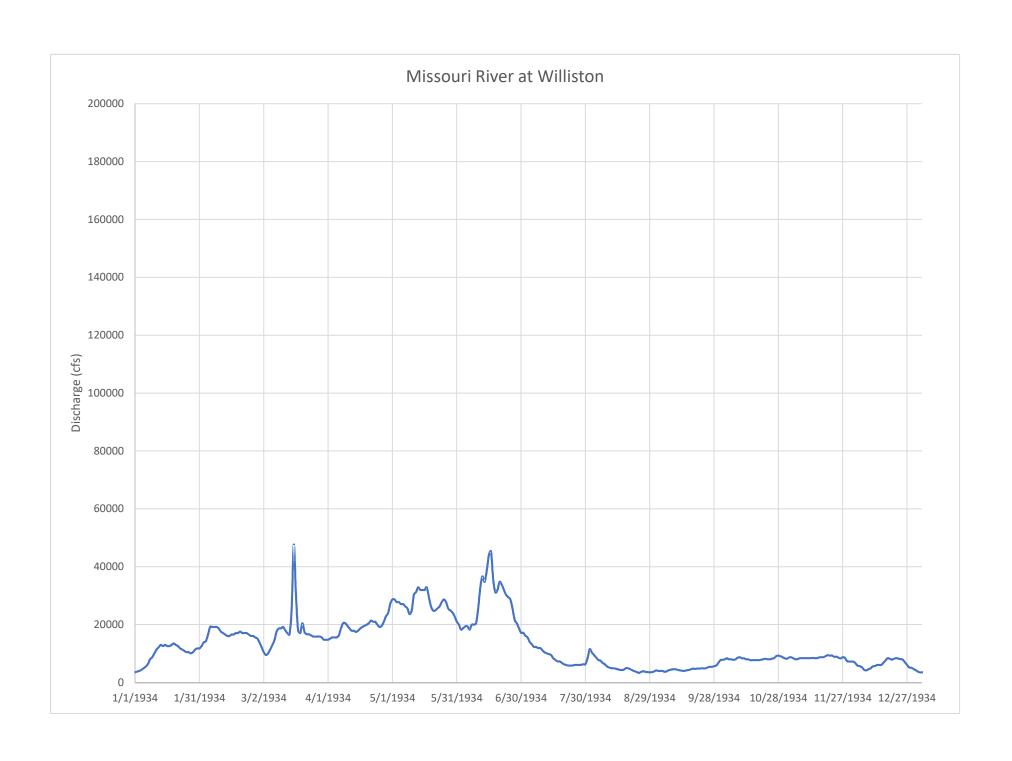


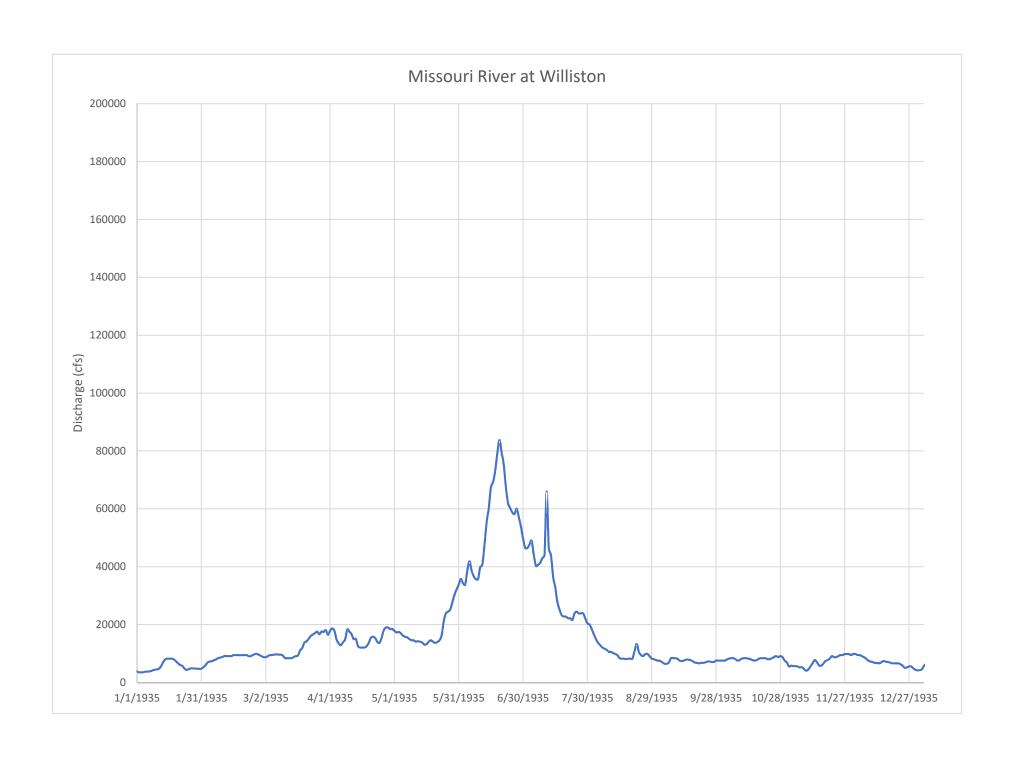


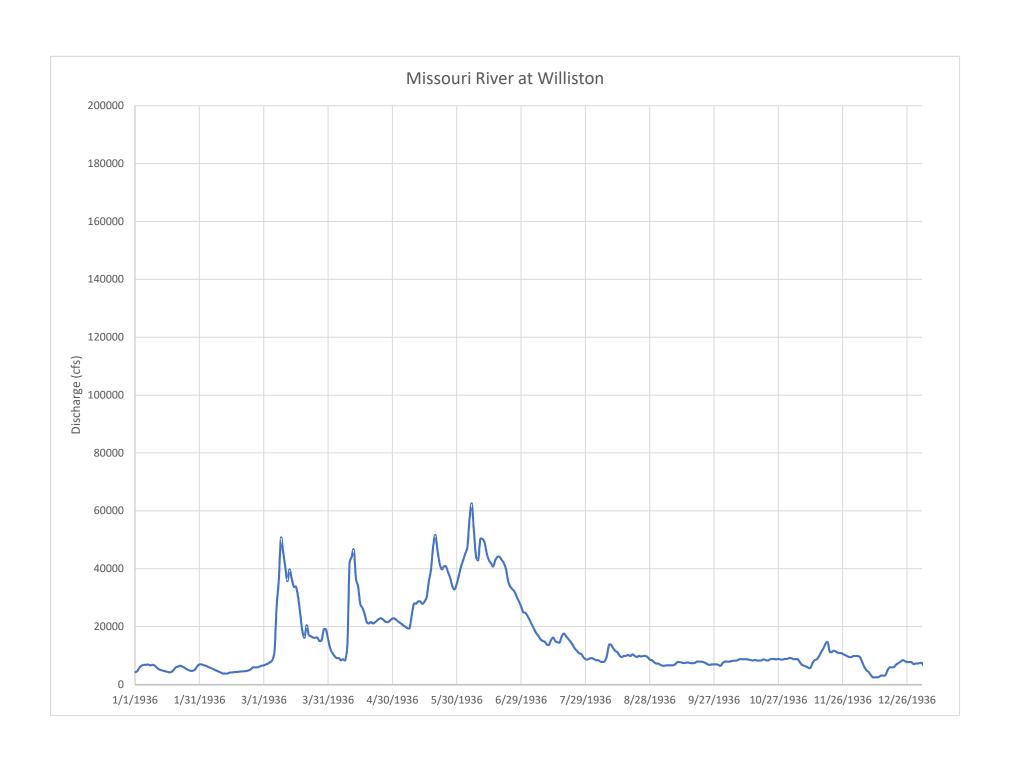


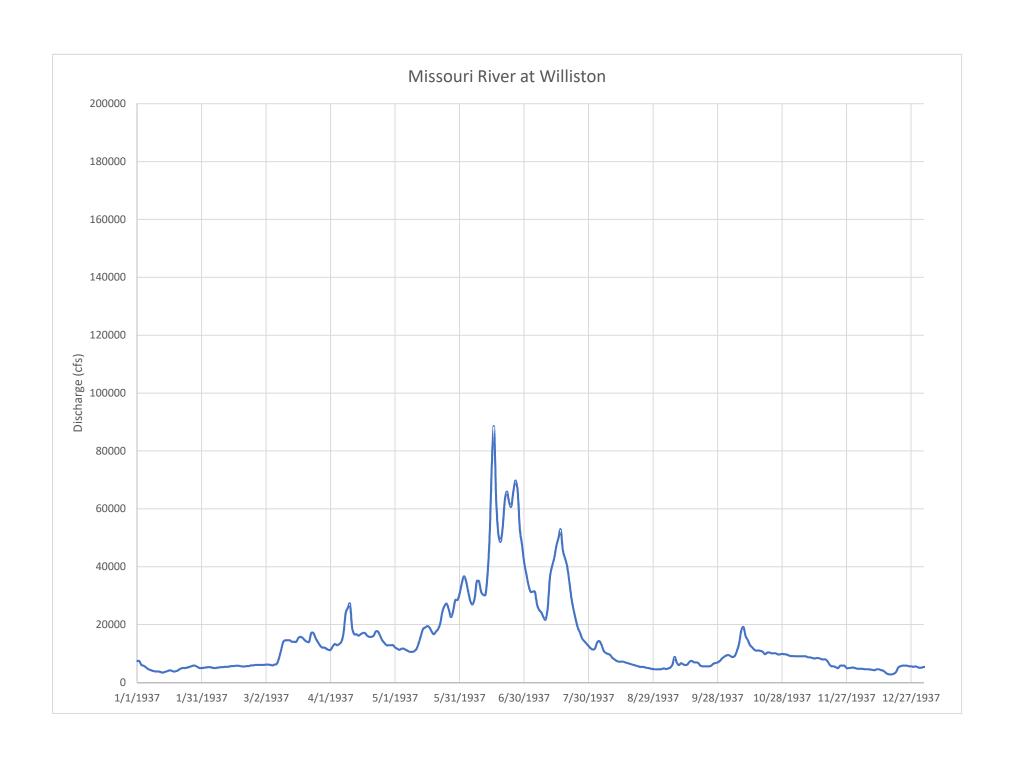


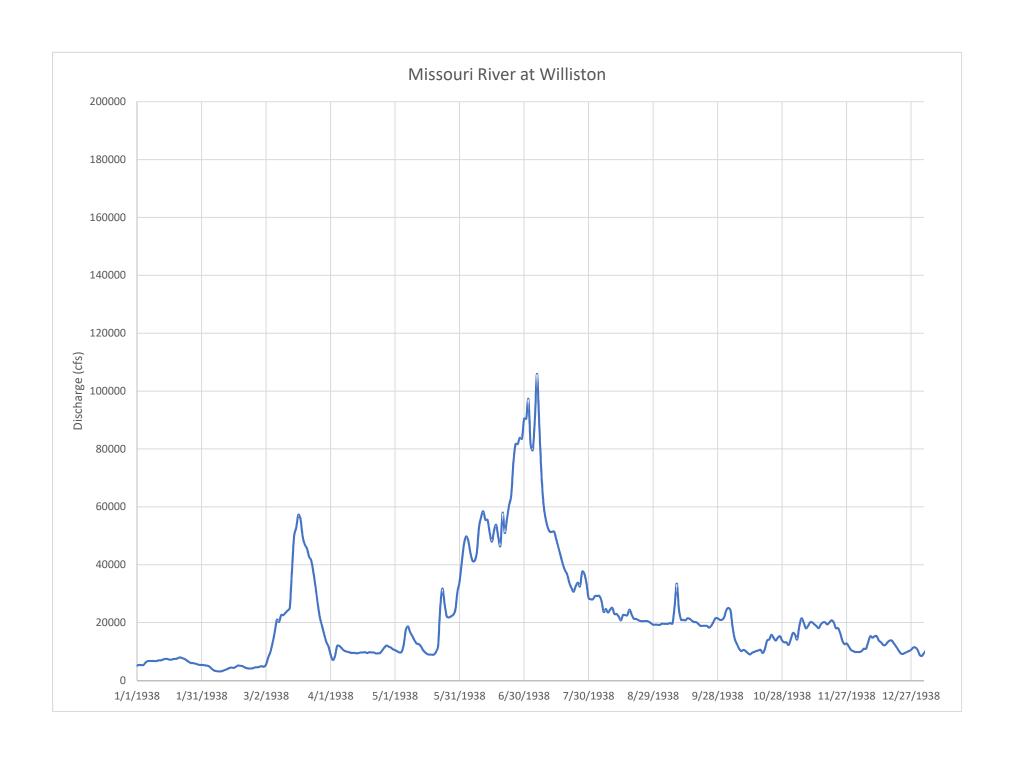


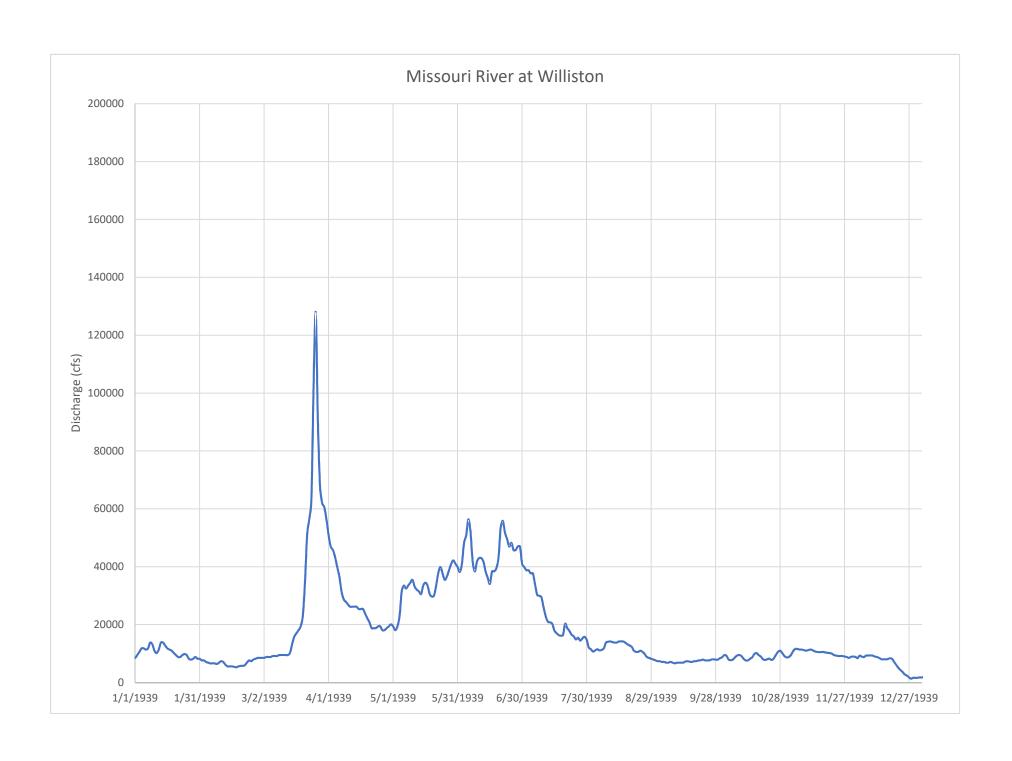


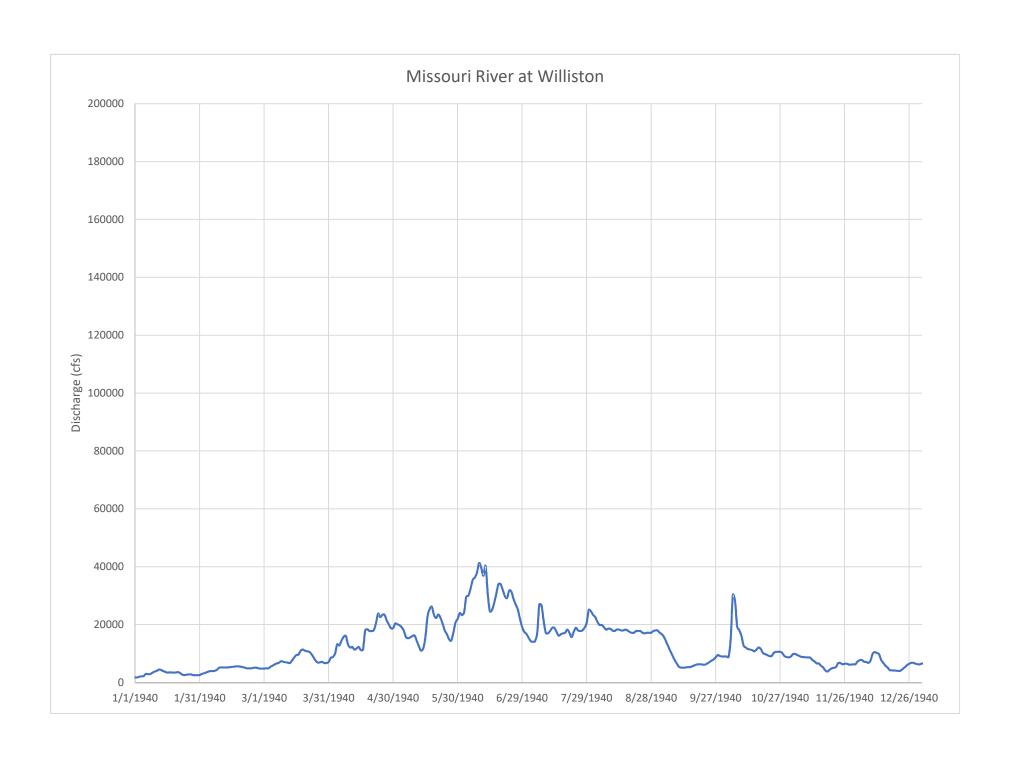


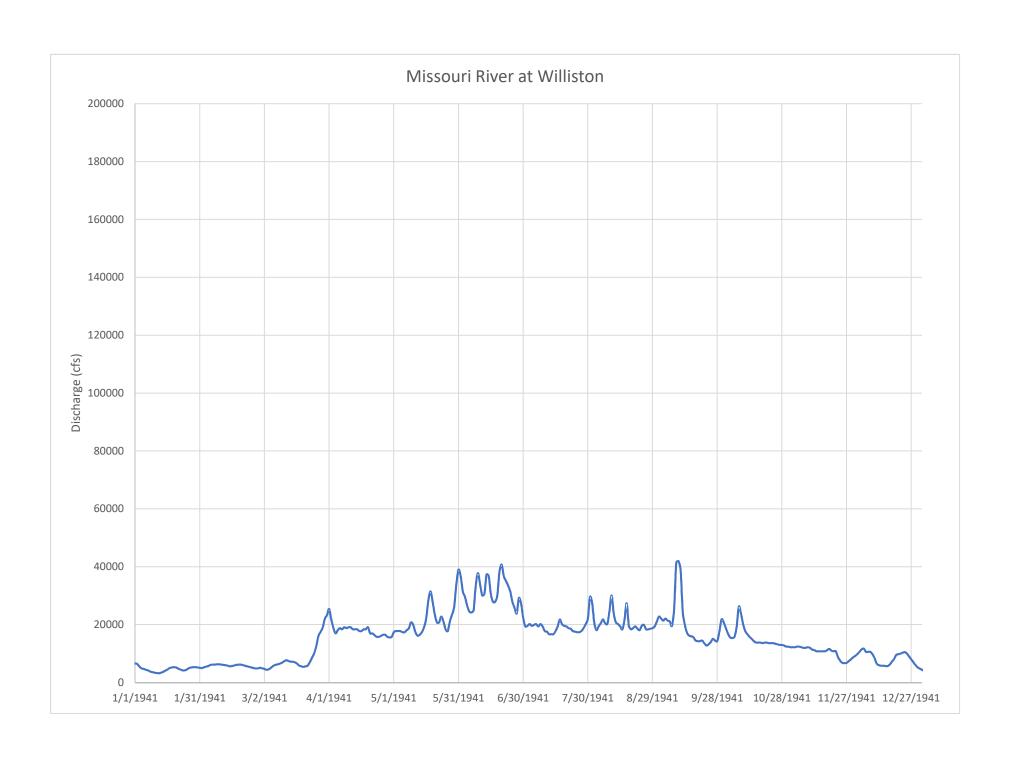


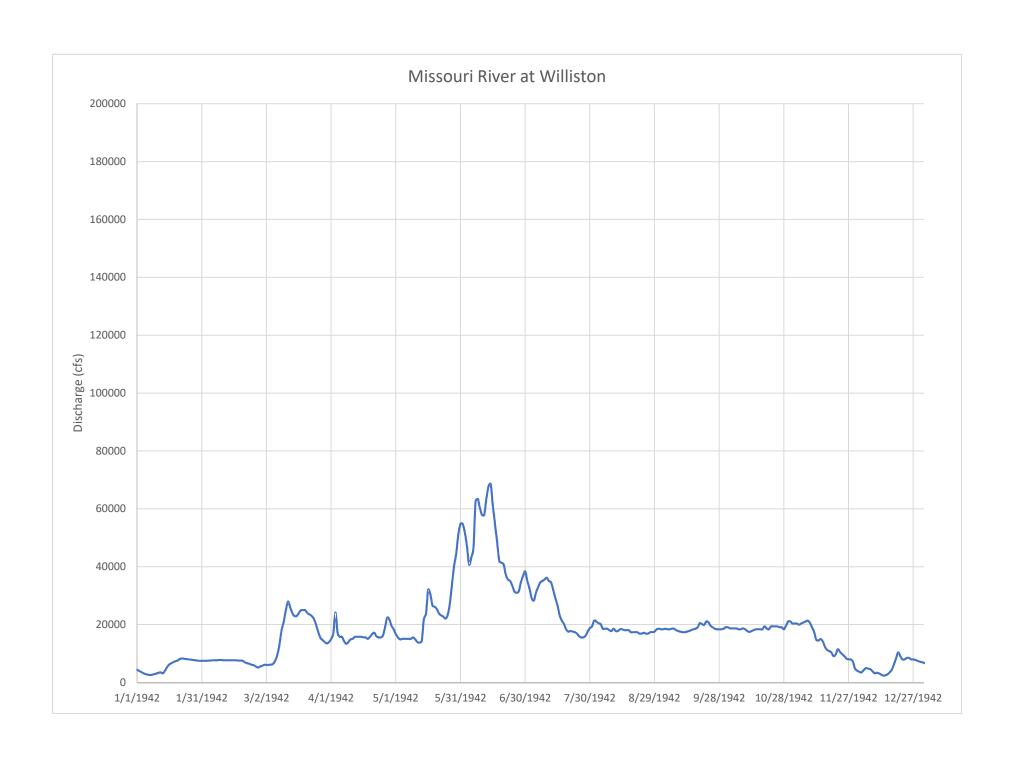


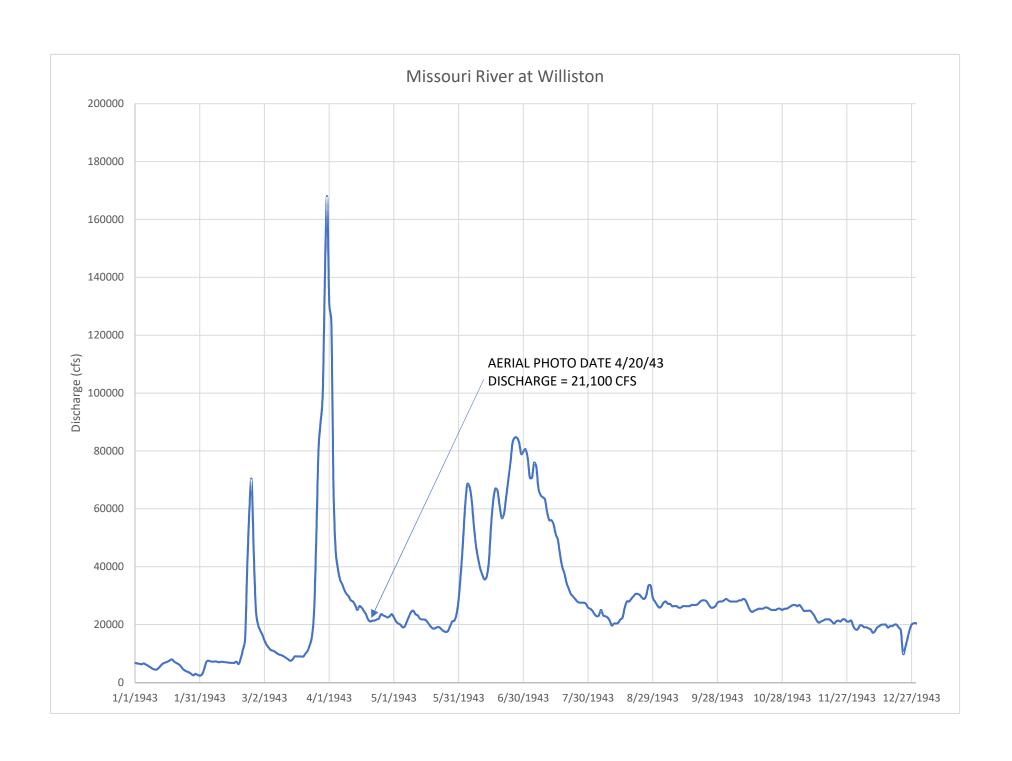


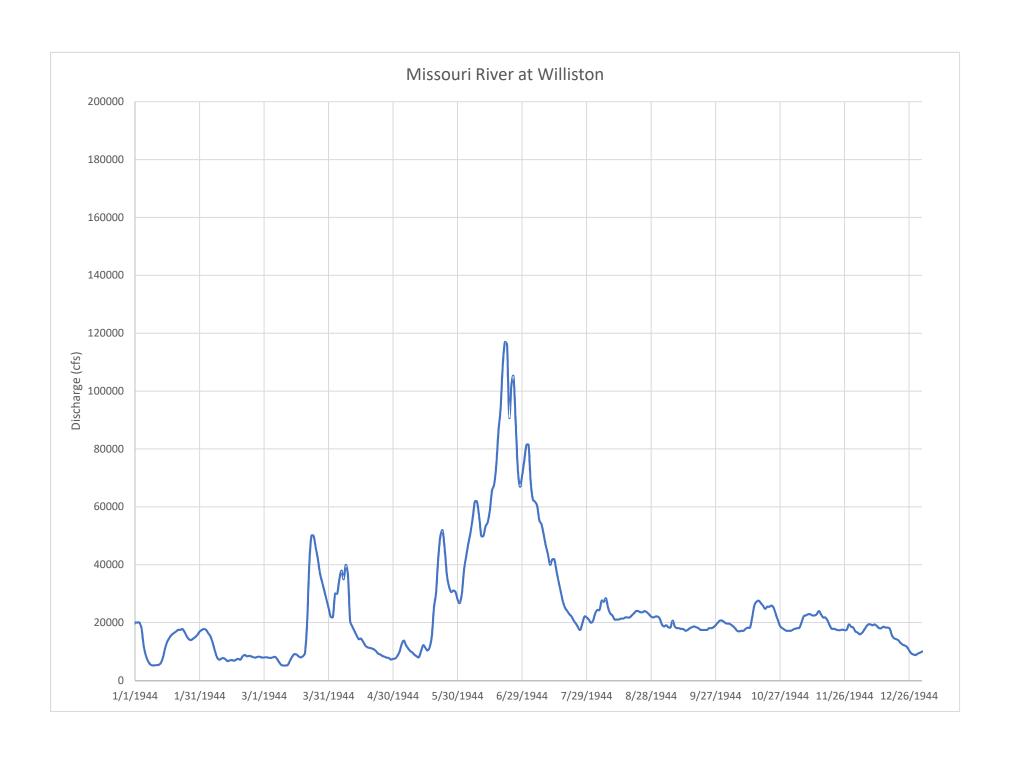


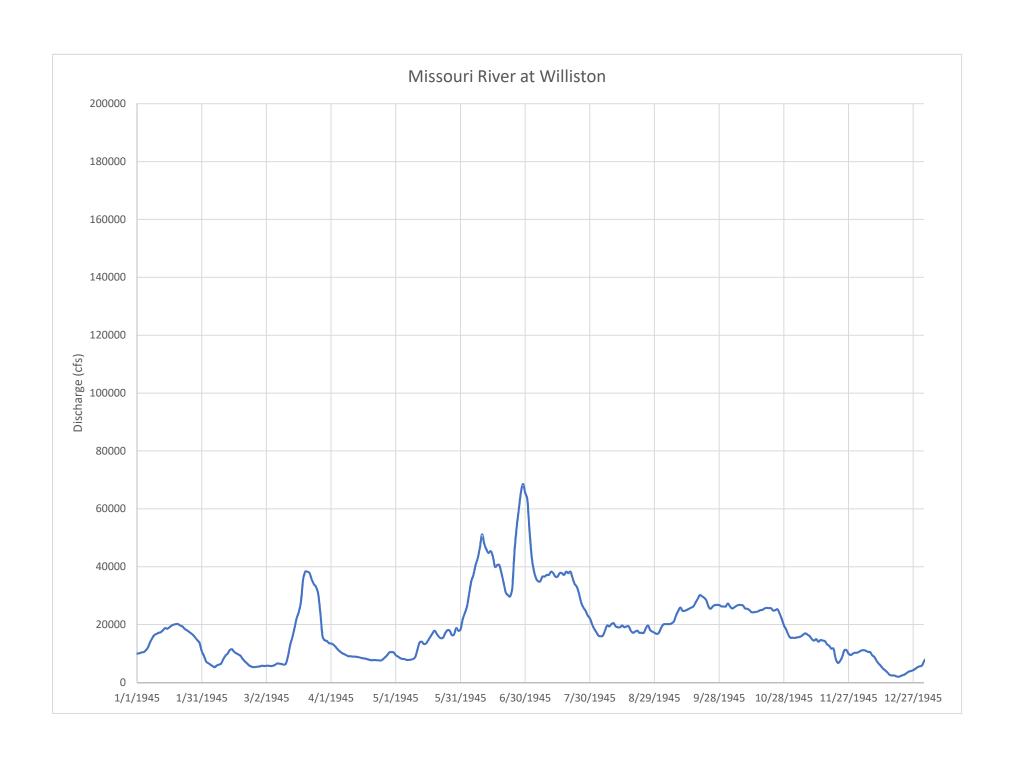


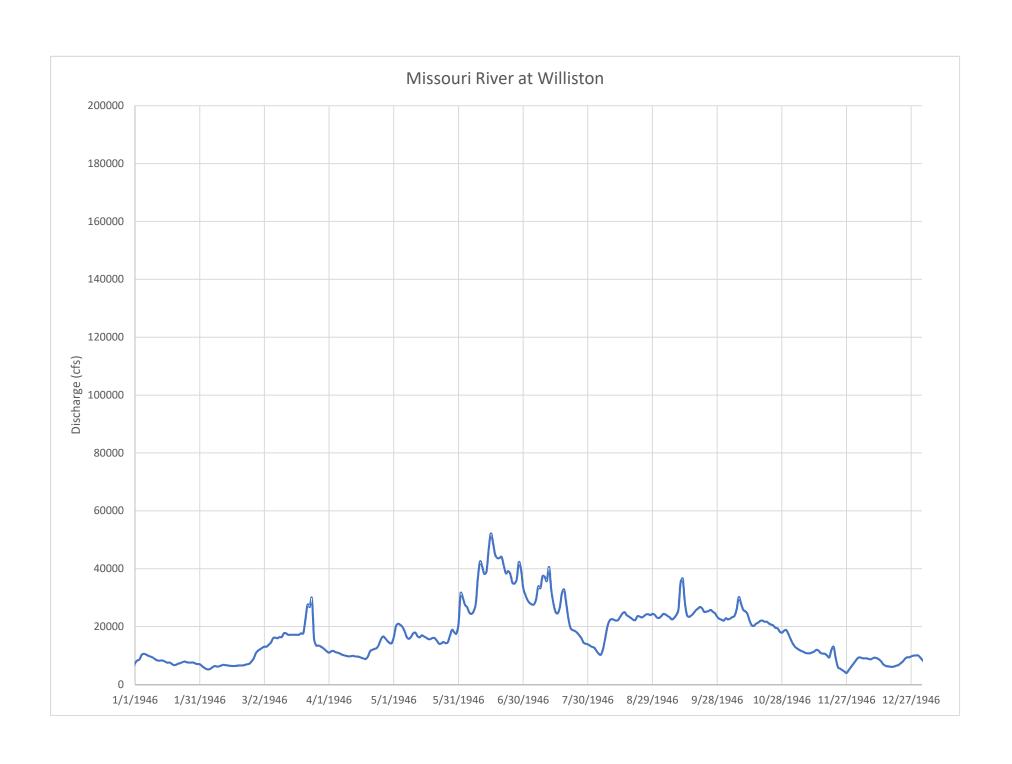


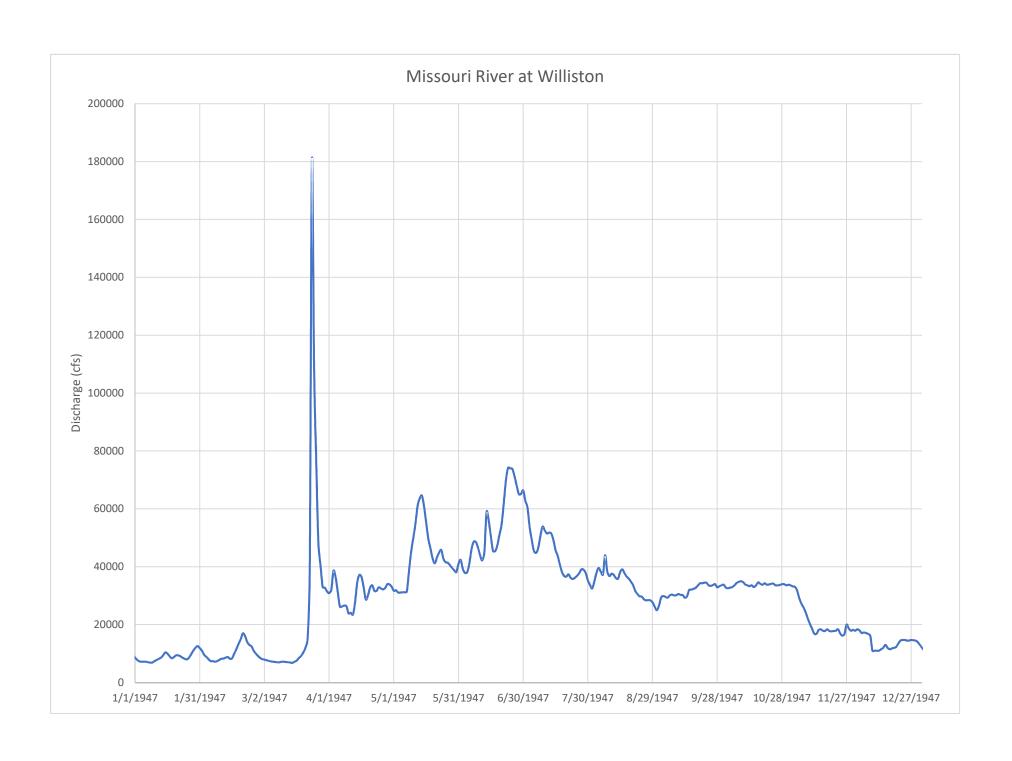


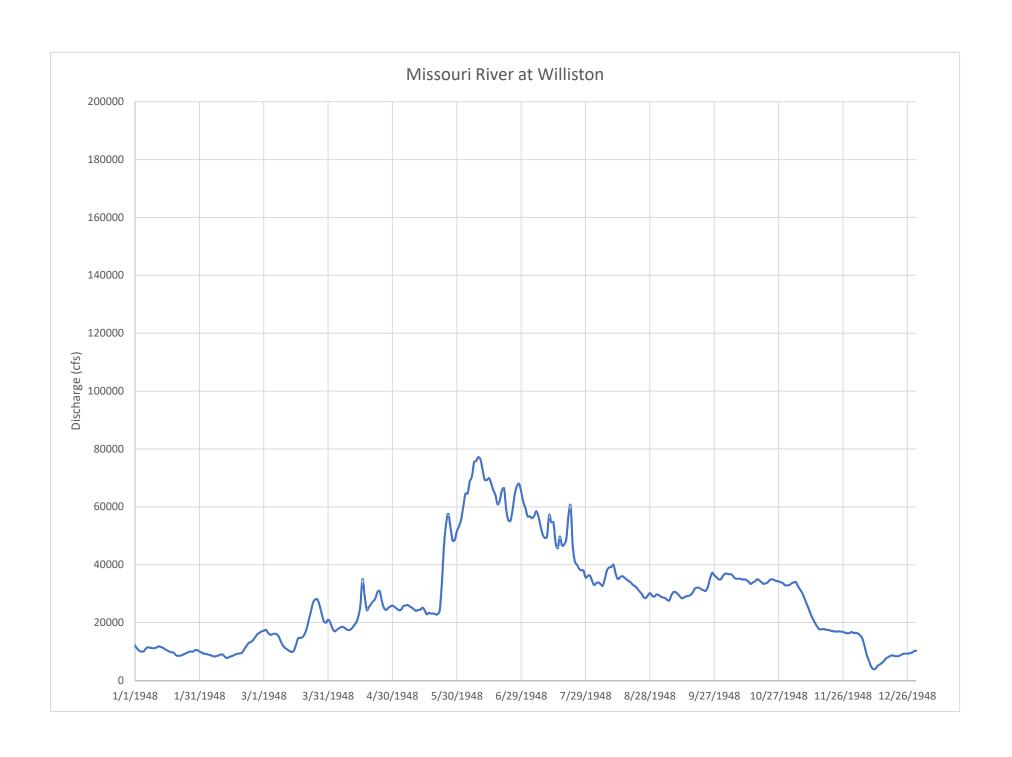


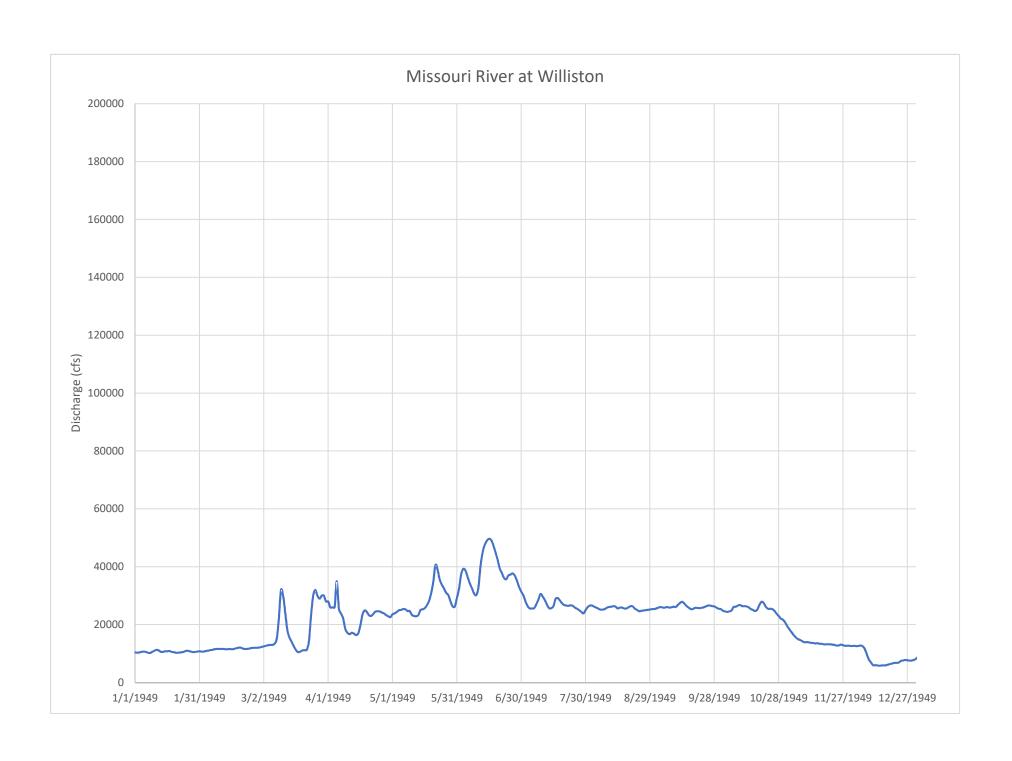


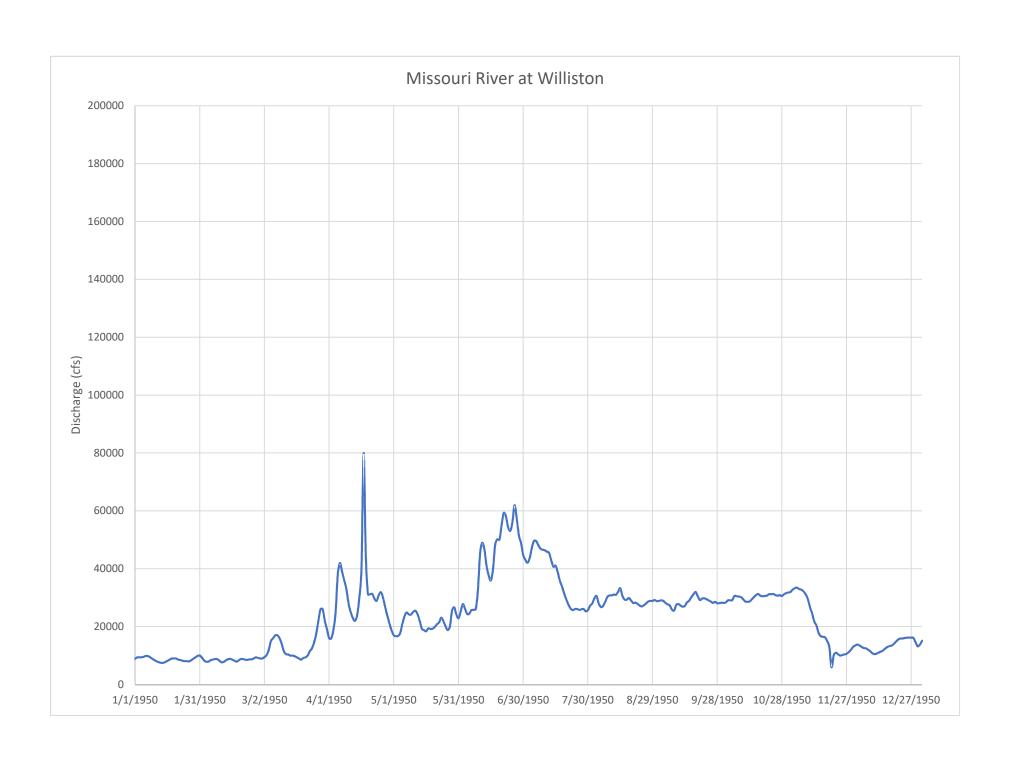


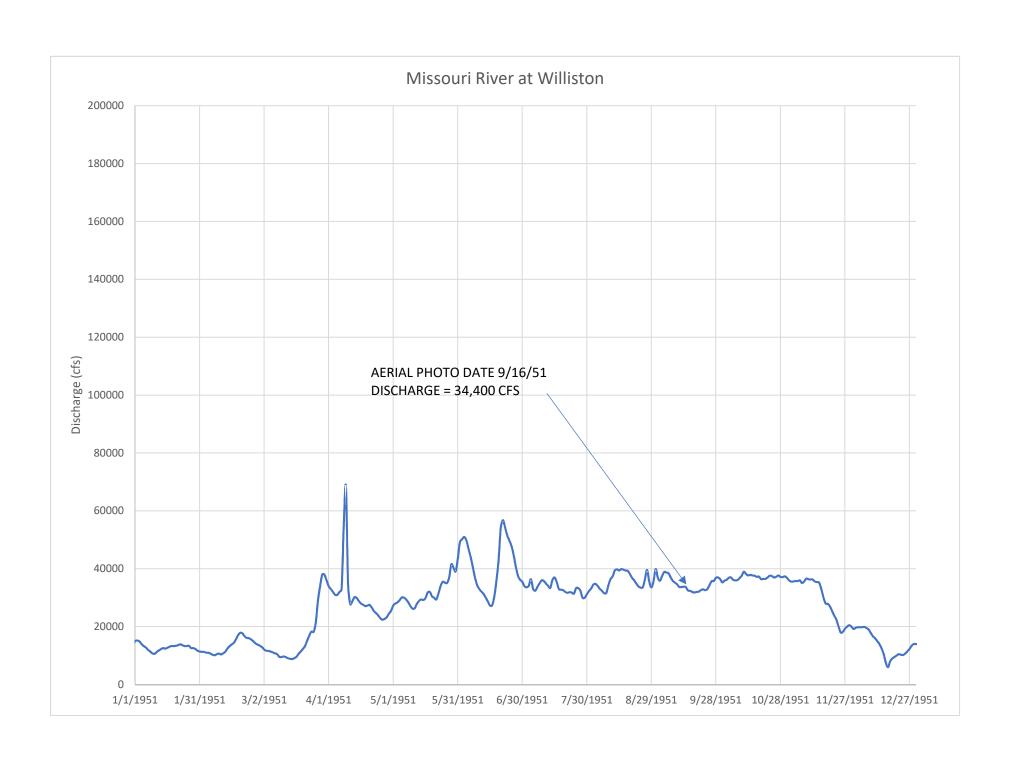


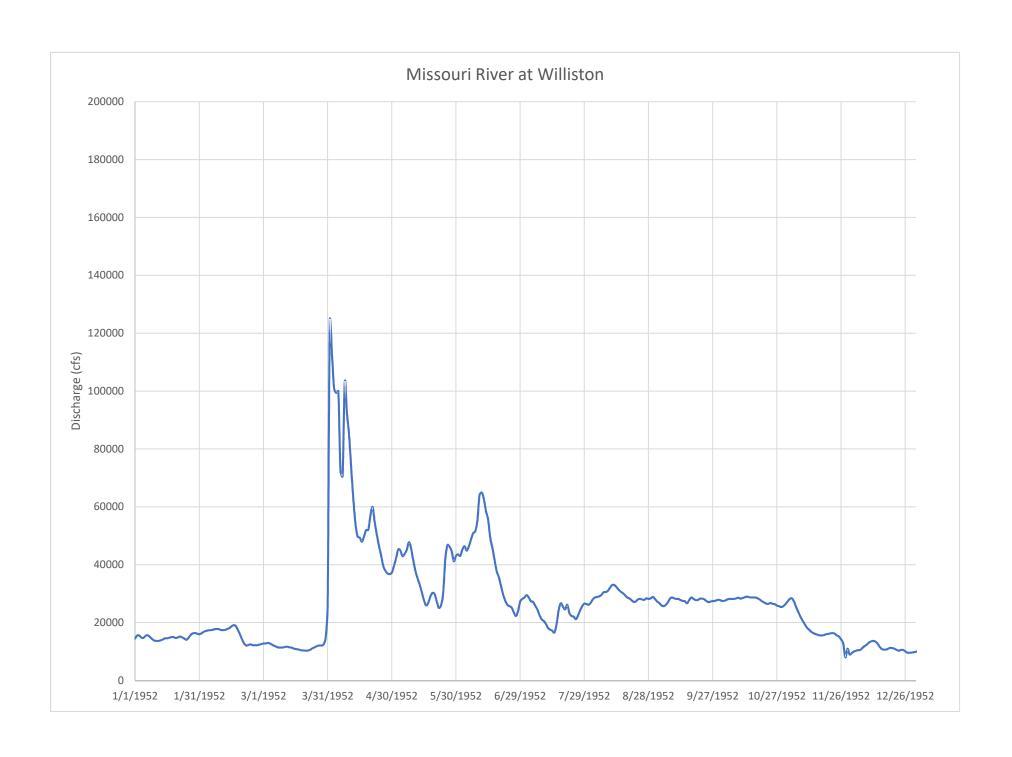












### Appendix D

Information from the USACE

#### Joel W. Toso

From: Pridal, Daniel B CIV USARMY CENWO (US) <daniel.b.pridal@usace.army.mil>

Sent: Wednesday, October 11, 2017 4:44 PM

**To:** Joel W. Toso

Cc: Kevin G. Nelson; Noel, Rick L CIV USARMY CENWO (US); Kolke, Timothy D CIV USARMY

CENWO (US); Morong, Lawrence J CIV USARMY CENWO (US)

**Subject:** RE: Pre-Dam Ordinary High Water Line upstream of Garrison Dam

**Attachments:** PreDam\_Sakakawea\_NGVD29.DSS; GA\_River\_Mile\_Conversion\_Tables.xlsx;

GA\_Sak\_Range\_Loc\_Map.pdf; GA\_Sak\_Survey\_Control\_Data.xlsx

Joel,

Attached is the survey data that we have from that era. Data was collected over a period of multiple years, some extreme flow events occurred during that time frame. Please be aware Omaha District does not express or imply any warranty concerning the accuracy, completeness, or applicability of the contained data and associated products for use. Conscientious and accountable use of the attached file(s) is the responsibility of the data requestor.

The historical survey data was collected in station - elevation format and is stored in dss. If you are not familiar with the DSSVUE program, it is available for download from HEC at: http://www.hec.usace.army.mil/software/hec-dssvue/

The attached file, GA\_Sak\_Survey\_Control\_data.xls, contains the best estimate of the cross section coordinate Northing and Easting. A quick comparison of cross section length to coordinate length will reveal discrepancies.

The location map is the best available map from that era showing cross section location.

Sediment ranges from that era were labeled according to the old 1941 river mile. The excel file river mile conversion provides the approximate location in both 1941 and 1960 river miles.

Dan

----Original Message-----

From: Joel W. Toso [mailto:jtoso@wenck.com]

Sent: Friday, October 06, 2017 2:28 PM

To: Pridal, Daniel B CIV USARMY CENWO (US) <daniel.b.pridal@usace.army.mil>

Cc: Kevin G. Nelson < knelson@wenck.com>

Subject: [EXTERNAL] Pre-Dam Ordinary High Water Line upstream of Garrison Dam

Dan,

Thanks for your help with our efforts toward establishing the pre-dam OHWM upstream of the Garrison Dam. As is evident in the email string below we've been corresponding with the Real Estate Division to get a better understanding of the tract boundaries adjacent to the river. It is apparent that these boundaries are based on the river's edge as depicted from the pre-dam topo (1943), not the OHWM. You mentioned that the COE has pre-dam surveyed cross sections of the river. If we had access to these data we could model the river reach in question and have an indication of how the OHWM elevation changes along the river. The reach in question is shown in the attached pdf.

Is the cross data in a form that can be stored on the same site as is being created by the Real Estate Division (see email below)?

Thanks again,

Joel

612-296-7732 cell

----Original Message-----

From: Otterson, Jesse E CIV USARMY CENWO (US) [mailto:Jesse.E.Otterson@usace.army.mil]

Sent: Friday, October 6, 2017 11:33 AM To: Joel W. Toso < itoso@wenck.com>

Cc: Kolke, Timothy D CIV USARMY CENWO (US) <Timothy.D.Kolke@usace.army.mil>; Kevin G. Nelson

<knelson@wenck.com>; Jayme M. Engen <jengen@wenck.com>; Jordan C. Shuck <jshuck@wenck.com>; Noel, Rick L

CIV USARMY CENWO (US) < Rick.L. Noel@usace.army.mil>

Subject: RE: Pre-Dam Ordinary High Water Line upstream of Garrison Dam

Jordan,

I'm planning to upload to a site called AMRDEC; you'll get a notification to download it within 14 days once it's uploaded. I should have it assembled and uploaded at the latest by Wednesday (11-Oct). The data is already georeferenced as well so it should hopefully help with incorporation in GIS products and analysis.

Thanks.

Jesse Otterson Senior Realty Specialist **USACE Omaha District Real Estate Division** 402-995-2875 ----Original Message-----

From: Joel W. Toso

Sent: Friday, October 6, 2017 11:00 AM

To: 'Otterson, Jesse E CIV USARMY CENWO (US)' < Jesse.E.Otterson@usace.army.mil>

Cc: Kolke, Timothy D CIV USARMY CENWO (US) <Timothy.D.Kolke@usace.army.mil>; Kevin G. Nelson

<knelson@wenck.com>; Jayme M. Engen <jengen@wenck.com>; Jordan C. Shuck <jshuck@wenck.com>; Noel, Rick L

CIV USARMY CENWO (US) < Rick.L. Noel@usace.army.mil>

Subject: RE: Pre-Dam Ordinary High Water Line upstream of Garrison Dam

Thanks Jesse.

We've attached a working map the shows the river reach we are studying. Our work starts at River Mile 1484 and goes upstream to RM 1565 (see yellow labels on the attached pdf).

Let me know if there is anything we can do to help with this. If you are planning to mail this information please send it to

Jordan Shuck, Principal **GIS** Department Wenck Associates, Inc. 1800 Pioneer Creek Center, P.O. Box 249 Maple Plain, MN 55359-0249

If you can give me an approximate time we can expect it that would help with planning.

#### Thanks again!

Joel

612-296-7732 cell (I'm working from home today).

----Original Message----

From: Otterson, Jesse E CIV USARMY CENWO (US) [mailto:Jesse.E.Otterson@usace.army.mil]

Sent: Friday, October 6, 2017 9:58 AM

To: Joel W. Toso <itoso@wenck.com>; Noel, Rick L CIV USARMY CENWO (US) <Rick.L.Noel@usace.army.mil>

Cc: Kolke, Timothy D CIV USARMY CENWO (US) <Timothy.D.Kolke@usace.army.mil>; Kevin G. Nelson <knelson@wenck.com>; Jayme M. Engen <jengen@wenck.com>; Jordan C. Shuck <jshuck@wenck.com>

Subject: RE: Pre-Dam Ordinary High Water Line upstream of Garrison Dam

Joel,

We can package them up and send them but do not have a public portal/method to pull the data.

Did you just need the area in the attachment you sent, or is the area of interest different? If you could advise on the area of interest I'd be happy to assist with sending the DRG's to you.

Thanks.

Jesse Otterson Senior Realty Specialist **USACE Omaha District Real Estate Division** 402-995-2875

----Original Message-----

From: Joel W. Toso [mailto:jtoso@wenck.com]

Sent: Friday, October 06, 2017 8:35 AM

To: Noel, Rick L CIV USARMY CENWO (US) < Rick.L.Noel@usace.army.mil>

Cc: Kolke, Timothy D CIV USARMY CENWO (US) <Timothy.D.Kolke@usace.army.mil>; Kevin G. Nelson

<knelson@wenck.com>; Otterson, Jesse E CIV USARMY CENWO (US) <Jesse.E.Otterson@usace.army.mil>; Jayme M.

Engen <jengen@wenck.com>; Jordan C. Shuck <jshuck@wenck.com>

Subject: [EXTERNAL] RE: Pre-Dam Ordinary High Water Line upstream of Garrison Dam

Thanks for your email, Mr. Noel.

The information provided is helpful. We have been doing some preliminary comparisons with 1943 and 1951-53 aerials (see attached screen captures from GIS work) and found fairly good comparison with the 1951-53 set. Could we get access to the digital versions 1943 topos? I believe there's a flat file drawer in Riverdale with 1943 topos we could scan if digital versions are not available.

Thanks,

Joel

612-296-7732 cell

----Original Message-----

From: Noel, Rick L CIV USARMY CENWO (US) [mailto:Rick.L.Noel@usace.army.mil]

Sent: Friday, October 6, 2017 7:32 AM

To: Joel W. Toso <jtoso@wenck.com>

Cc: Kolke, Timothy D CIV USARMY CENWO (US) <Timothy.D.Kolke@usace.army.mil>; Kevin G. Nelson <knelson@wenck.com>; Otterson, Jesse E CIV USARMY CENWO (US) <Jesse.E.Otterson@usace.army.mil>

Subject: RE: Pre-Dam Ordinary High Water Line upstream of Garrison Dam

Mr. Toso

I asked our lead Geographer to look at the map and respond to the question your annotation on the Garrison segment map. His response is as follows:

"This is actually not taken from GLO; it is the depiction of the river bank on 1943 USGS Topo Maps. I have DRG's (digitial versions) but cannot verify the scale it was drawn at (it looks like 1:24000 though).

I don't have any other information on those topo maps without doing additional research, but that is the source we used to compile the bankline on the Garrison Segment maps. The line from the GLO's typically is depicted, but it is the broken/dashed line that is not as thick as the bank line in question."

Rick L. Noel

Chief, Civil Branch, Real Estate Division Real Estate Contracting Officer USAED, Omaha 402-995-2832 (phone) 402-995-2826 (fax) rick.l.noel@usace.army.mil

----Original Message-----

From: Joel W. Toso [mailto:jtoso@wenck.com] Sent: Wednesday, October 04, 2017 2:07 PM

To: Noel, Rick L CIV USARMY CENWO (US) < Rick.L.Noel@usace.army.mil>

Cc: Kolke, Timothy D CIV USARMY CENWO (US) <Timothy.D.Kolke@usace.army.mil>; Kevin G. Nelson

<knelson@wenck.com>

Subject: [EXTERNAL] Pre-Dam Ordinary High Water Line upstream of Garrison Dam

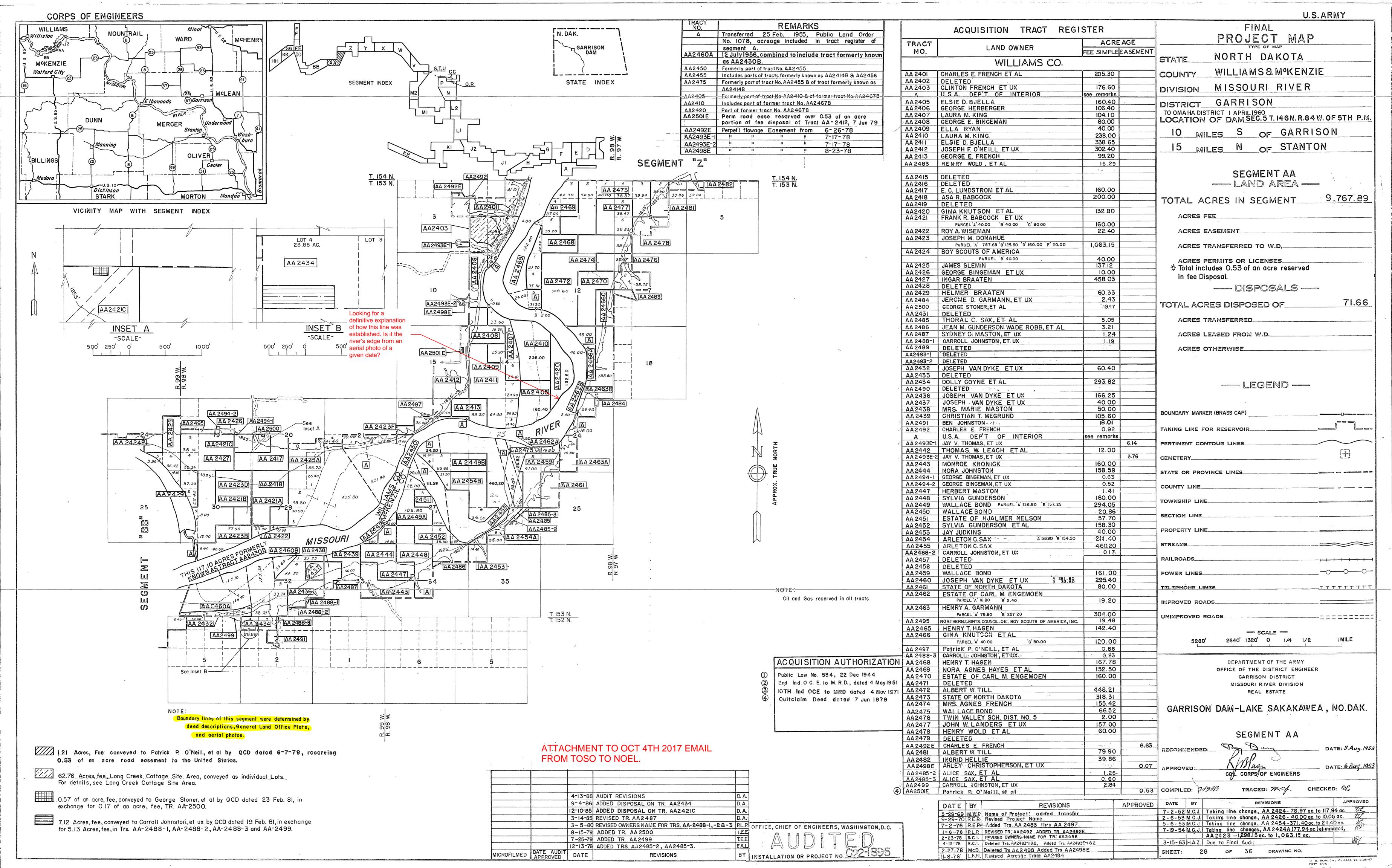
Good afternoon Mr. Noel,

This email is a follow up to my voicemail this morning. Wenck Associates is working for the State of North Dakota. We are tasked with determining if clear and convincing evidence is present that the Corps survey for tracts under the current pool level of Lake Sakakawea does not accurately represent the Ordinary High Water Mark of the historic Missouri riverbed per state law.

We've started going through the records available at Riverdale. Tim Kolke mentioned that there may be more information available in Omaha. The attachment is an tract map for Segment AA we obtained from Tim. We are looking at the tracts from Segment V to HH. I've annotated a line on the attached map that appears to be a delineation of the edge of the river from an aerial photo. Is there information available to substantiate this or define how it was established? We would appreciate any assistance you can provide.

Thanks, Joel Toso, PhD, PH, PE (MN) Senior Water Resources Engineer

jtoso@wenck.com | D 701.751.3370 | C 612.296.7732 301-1st Street, Mandan, ND 58554



## ATTACHMENT TO OCT 11TH 2017 EMAIL FROM PRIDAL TO TOSO GA\_River\_Mile\_Conversion\_Tables.xlsx.

| Garrison Dam - Lake Sakakawea<br>Mainstem Sediment Range Name & Mileage |                                |                  |        |  |  |  |  |  |  |  |  |
|---|--------------------------------|------------------|--------|--|--|--|--|--|--|--|--|
| iviallistell  | ī                              | ge Maille & Mill | eage   |  |  |  |  |  |  |  |  |
| Original  | 1941 River Mile -<br>Range No. | 1960 River Mile  | ΔR.M.  |  |  |  |  |  |  |  |  |
|   |                                |                  |        |  |  |  |  |  |  |  |  |
|   | FP Dam                         | 1771.50          |        |  |  |  |  |  |  |  |  |
| 1B  | 1690.7                         | 1590.20          | 181.30 |  |  |  |  |  |  |  |  |
| 1A  | 1685.8                         | 1584.85          | 5.35   |  |  |  |  |  |  |  |  |
| 1C  | 1684.4                         | 1583.56          | 1.29   |  |  |  |  |  |  |  |  |
| 1D  | 1683.2                         | 1582.39          | 1.17   |  |  |  |  |  |  |  |  |
| 1   | 1682.1                         | 1581.26          | 1.13   |  |  |  |  |  |  |  |  |
| 1E  | 1681.1                         | 1580.19          | 1.07   |  |  |  |  |  |  |  |  |
| 1F  | 1680.0                         | 1578.94          | 1.25   |  |  |  |  |  |  |  |  |
| 2A  | 1678.5                         | 1577.27          | 1.67   |  |  |  |  |  |  |  |  |
| 2   | 1678.0                         | 1576.77          | 0.50   |  |  |  |  |  |  |  |  |
| 2B  | 1676.6                         | 1575.38          | 1.39   |  |  |  |  |  |  |  |  |
| 2C  | 1675.3                         | 1574.03          | 1.35   |  |  |  |  |  |  |  |  |
| 3   | 1674.1                         | 1573.18          | 0.85   |  |  |  |  |  |  |  |  |
| 3A  | 1673.4                         | 1572.49          | 0.69   |  |  |  |  |  |  |  |  |
| 3B  | 1672.6                         | 1571.75          | 0.74   |  |  |  |  |  |  |  |  |
| 4   | 1671.6                         | 1570.73          | 1.02   |  |  |  |  |  |  |  |  |
| 4A  | 1671.2                         | 1570.30          | 0.43   |  |  |  |  |  |  |  |  |
| 4D  | 1670.2                         | 1569.20          | 1.10   |  |  |  |  |  |  |  |  |
| 5   | 1668.8                         | 1568.79          | 0.41   |  |  |  |  |  |  |  |  |
| 5B  | 1665.5                         | 1568.25          | 0.54   |  |  |  |  |  |  |  |  |
| 5C  | 1664.8                         | 1567.54          | 0.71   |  |  |  |  |  |  |  |  |
| 6   | 1663.9                         | 1566.57          | 0.97   |  |  |  |  |  |  |  |  |
| 6A  | 1662.9                         | 1565.49          | 1.08   |  |  |  |  |  |  |  |  |
| 7A  | 1661.9                         | 1564.58          | 0.91   |  |  |  |  |  |  |  |  |
| 7   | 1661.3                         | 1563.64          | 0.94   |  |  |  |  |  |  |  |  |
| 7<br>7B   | 1660.7                         | 1563.25          | 0.34   |  |  |  |  |  |  |  |  |
| 8   | 1659.0                         | 1561.71          | 1.54   |  |  |  |  |  |  |  |  |
| 8   | 1657.3                         | 1559.79          | 1.92   |  |  |  |  |  |  |  |  |
| 9   | 1655.8                         | 1558.34          | 1.45   |  |  |  |  |  |  |  |  |
| 9<br>9A   | 1653.2                         | 1555.54          | 2.80   |  |  |  |  |  |  |  |  |
| 9A<br>9B  |                                |                  |        |  |  |  |  |  |  |  |  |
|   | 1651.3                         | 1553.84          | 1.70   |  |  |  |  |  |  |  |  |
| 10  | 1650.3                         | 1552.85          | 0.99   |  |  |  |  |  |  |  |  |
| 10A   | 1648.1                         | 1550.83          | 2.02   |  |  |  |  |  |  |  |  |
| 11  | 1646.0                         | 1548.89          | 1.94   |  |  |  |  |  |  |  |  |
| 11A   | 1644.5                         | 1547.82          | 1.07   |  |  |  |  |  |  |  |  |
| 11B   | 1639.7                         | 1544.45          | 3.37   |  |  |  |  |  |  |  |  |
| 12  | 1639.5                         | 1544.29          | 0.16   |  |  |  |  |  |  |  |  |
| 12A   | 1636.2                         | 1540.00          | 4.29   |  |  |  |  |  |  |  |  |
| 13  | 1632.8                         | 1537.90          | 2.10   |  |  |  |  |  |  |  |  |
| 13A   | 1629.4                         | 1535.54          | 2.36   |  |  |  |  |  |  |  |  |
| 13B   | 1627.5                         | 1533.67          | 1.87   |  |  |  |  |  |  |  |  |
| 14  | 1627.5                         | 1533.67          | 0.00   |  |  |  |  |  |  |  |  |
| 14A   | 1626.0                         | 1532.25          | 1.42   |  |  |  |  |  |  |  |  |
| 14B   | 1624.3                         | 1530.42          | 1.83   |  |  |  |  |  |  |  |  |

| Garrison Dam - Lake Sakakawea Tributary Sediment Range Name & |             |                      |  |  |  |  |  |  |  |
|---|-------------|----------------------|--|--|--|--|--|--|--|
| Tributary Seaming   |             | 1941 River           |  |  |  |  |  |  |  |
| Stream  | Original    | Mile                 |  |  |  |  |  |  |  |
| V II  | <b>5</b> 1/ | V40.6                |  |  |  |  |  |  |  |
| Yellowstone River   | 5Y          | Y19.6                |  |  |  |  |  |  |  |
|   | 4Y          | Y12.9                |  |  |  |  |  |  |  |
|   | 3Y          | Y9.6                 |  |  |  |  |  |  |  |
|   | 2Y          | Y6.8                 |  |  |  |  |  |  |  |
|   | 1YE         | Y5.9                 |  |  |  |  |  |  |  |
|   | 1YD         | Y4.7                 |  |  |  |  |  |  |  |
|   | 1Y          | Y3.6                 |  |  |  |  |  |  |  |
|   | 1YC         | Y2.7                 |  |  |  |  |  |  |  |
|   | 1YB         | Y1.8                 |  |  |  |  |  |  |  |
|   | 1YA         | Y0.6                 |  |  |  |  |  |  |  |
| Little Muddy River  | 2M          | MUD 8.4              |  |  |  |  |  |  |  |
|   | 1M          | MUD 3.2              |  |  |  |  |  |  |  |
|   | 3M          | MUD 0.4              |  |  |  |  |  |  |  |
| Tobacco Garden Cr   | T3          | TG 4.9               |  |  |  |  |  |  |  |
|   | T2          | TG 2.9               |  |  |  |  |  |  |  |
|   | T1          | TG 1.0               |  |  |  |  |  |  |  |
| White Earth Creek   | W4          | WE 11.4              |  |  |  |  |  |  |  |
|   | W3          | WE 9.8               |  |  |  |  |  |  |  |
|   | W2          | WE 8.2               |  |  |  |  |  |  |  |
|   | W1          | WE 6.9               |  |  |  |  |  |  |  |
| Bear Den Creek  | В3          | BD 4.0               |  |  |  |  |  |  |  |
|   | В2          | BD 2.3               |  |  |  |  |  |  |  |
|   | B1          | BD 0.2               |  |  |  |  |  |  |  |
| Shell Creek   | S2          | SH 31.7              |  |  |  |  |  |  |  |
| Silen Greek   | S1          | SH 29.6              |  |  |  |  |  |  |  |
|   | 23B         | SH 25.7              |  |  |  |  |  |  |  |
|   | 23C         | SH 13.2              |  |  |  |  |  |  |  |
| Little Missouri Rive  | 11L         | LM 63.6              |  |  |  |  |  |  |  |
| Little Wiissouri Mive   | 10L         | LM 60.1              |  |  |  |  |  |  |  |
|   | 9L          | LM 56.8              |  |  |  |  |  |  |  |
|   | 8LA         | LM 53.8              |  |  |  |  |  |  |  |
|   | 8L          | LM 51.0              |  |  |  |  |  |  |  |
|   | 7LA         | LM 45.7              |  |  |  |  |  |  |  |
|   | 7LA<br>7L   | LIVI 43.7<br>LM 43.1 |  |  |  |  |  |  |  |
|   |             |                      |  |  |  |  |  |  |  |
|   | 6LA         | LM 40.4              |  |  |  |  |  |  |  |
|   | 6L          | LM 36.6              |  |  |  |  |  |  |  |
|   | 5L          | LM 30.2              |  |  |  |  |  |  |  |
|   | 4L          | LM 23.9              |  |  |  |  |  |  |  |
|   | 3L          | LM 18.3              |  |  |  |  |  |  |  |
|   | 2L          | LM 12.5              |  |  |  |  |  |  |  |
|   | 1L          | LM 7.0               |  |  |  |  |  |  |  |
| Hans Creek  | Н3          | H 3.7                |  |  |  |  |  |  |  |
|   | H2          | H 2.9                |  |  |  |  |  |  |  |
| ı   | H1          | H 1.5                |  |  |  |  |  |  |  |

|           | Sedi             | iment Ranges       | 2.33         |
|-----------|------------------|--------------------|--------------|
|           | Average Dista    | nce between        | 2.33         |
|           |                  |                    | -            |
|           | GA Dam           | 1389.86            | 1.26         |
| 34        | 1456.6           | 1391.12            | 1.48         |
| 33        | 1459.6           | 1392.60            | 2.05         |
| 32        | 1461.6           | 1394.65            | 3.81         |
| 31        | 1465.8           | 1398.46            | 4.35         |
| 30        | 1476.8<br>1469.9 | 1409.47            | 4.95<br>6.66 |
| 28A<br>29 | 1482.3<br>1476.8 | 1414.42<br>1409.47 | 2.74<br>4.95 |
| 28        | 1485.4           | 1417.16            | 4.55<br>2.74 |
| 27        | 1490.3           | 1421.71            | 6.57         |
|           | 1499.3           | 1428.28            | 6.40         |
| 25        | 1506.6           | 1434.68            | 4.59         |
| 24        | 1511.2           | 1439.27            | 5.77         |
| 23E       | 1517.0           | 1445.04            | 5.09         |
| 23D       | 1524.9           | 1450.13            | 3.24         |
| 23F       | 1528.0           | 1453.37            | 3.11         |
| 23A       | 1531.6           | 1456.48            | 5.80         |
| 23        | 1538.0           | 1462.28            | 6.56         |
| 22        | 1545.1           | 1468.84            | 3.23         |
| 21A       | 1548.5           | 1472.07            | 5.67         |
| 21        | 1554.2           | 1477.74            | 2.86         |
| 20C       | 1557.2           | 1480.60            | 3.32         |
| 20A       | 1561.6           | 1483.92            | 1.80         |
| 20B       | 1563.8           | 1485.72            | 1.78         |
| 20        | 1567.2           | 1487.50            | 2.34         |
|           | 1570.6           | 1489.84            | 2.41         |
| 19A       | 1573.5           | 1492.25            | 2.32         |
| 19        | 1578.2           | 1494.57            | 2.54         |
| 18D       | 1581.8           | 1497.11            | 2.51         |
| 18A       | 1584.8           | 1499.62            | 2.23         |
| 18C       | 1587.4           | 1501.85            | 2.54         |
| 18B       | 1590.5           | 1504.39            | 2.06         |
| 18        | 1592.8           | 1506.45            | 2.21         |
| 17B       | 1595.2           | 1508.66            | 1.93         |
| 17D       | 1598.8           | 1510.59            | 1.59         |
| 17A       | 1600.7           | 1512.18            | 1.91         |
| 17C       | 1602.8           | 1514.09            | 2.08         |
| 17        | 1605.8           | 1516.17            | 1.70         |
| 16B       | 1607.5           | 1517.87            | 1.80         |
| 16A       | 1610.8           | 1519.67            | 1.92         |
| 16        | 1613.6           | 1521.59            | 2.31         |
| 15B       | 1616.5           | 1523.90            | 3.04         |
| 15A       | 1619.8           | 1526.94            | 1.74         |
| 15        | 1622.1           | 1528.68            | 1.74         |

| Douglas Creek | D4  | D 20.2  |
|---------------|-----|---------|
|               | D3  | D 17.6  |
|               | D2  | D 16.4  |
|               | D1  | D 10.8  |
| Snake Creek   | 32A | SN 20.2 |
|               | 32B | SN 14.9 |
|               | 32F | SN 8.2  |
|               | 32C | SN 5.3  |
| Wolf Creek    | 32E | W 4.1   |
|               | 32D | W 1.0   |

| Garrison Degradation Reach |                                  |                           |       |  |  |  |  |  |  |  |  |
|----------------------------|----------------------------------|---------------------------|-------|--|--|--|--|--|--|--|--|
| Mainstem S                 | Mainstem Sediment Range Name & M |                           |       |  |  |  |  |  |  |  |  |
| Original                   | 1941 River Mile                  | 1960 River                | ΔR.M. |  |  |  |  |  |  |  |  |
| - 0                        | Range No.                        | Mile                      |       |  |  |  |  |  |  |  |  |
|                            |                                  |                           |       |  |  |  |  |  |  |  |  |
| 101                        | GA Dam                           | 1389.86                   | 4.67  |  |  |  |  |  |  |  |  |
| 101                        | 1453.4                           | 1388.19                   | 1.67  |  |  |  |  |  |  |  |  |
| 101A                       | 1452.3                           | 1387.09                   | 1.10  |  |  |  |  |  |  |  |  |
| 102                        | 1451.1                           | 1385.88                   | 1.21  |  |  |  |  |  |  |  |  |
| 103                        | 1450.1                           | 1384.86                   | 1.02  |  |  |  |  |  |  |  |  |
| 103A                       | 1448.4                           | 1383.33                   | 1.53  |  |  |  |  |  |  |  |  |
| 104                        | 1447.3                           | 1382.25                   | 1.08  |  |  |  |  |  |  |  |  |
| 104B                       | 1446.4                           | 1381.34                   | 0.91  |  |  |  |  |  |  |  |  |
| 104A                       | 1445.5                           | 1380.43                   | 0.91  |  |  |  |  |  |  |  |  |
| 104C                       | 1444.7                           | 1379.68                   | 0.75  |  |  |  |  |  |  |  |  |
| 105                        | 1443.8                           | 1379.00                   | 0.68  |  |  |  |  |  |  |  |  |
| 105B                       | 1443.3                           | 1378.42                   | 0.58  |  |  |  |  |  |  |  |  |
| 105C                       | 1442.4                           | 1377.53                   | 0.89  |  |  |  |  |  |  |  |  |
| 105A                       | 1441.7                           | 1376.71                   | 0.82  |  |  |  |  |  |  |  |  |
| 105D                       | 1440.8                           | 1375.89                   | 0.82  |  |  |  |  |  |  |  |  |
| 106                        | 1440.0                           | 1374.91                   | 0.98  |  |  |  |  |  |  |  |  |
| 106A                       | 1439.5                           | 1374.58                   | 0.33  |  |  |  |  |  |  |  |  |
| 106B                       | 1438.8                           | 1373.80                   | 0.78  |  |  |  |  |  |  |  |  |
| 107                        | 1437.4                           | 1372.50                   | 1.30  |  |  |  |  |  |  |  |  |
| 107A                       | 1436.2                           | 1371.37                   | 1.13  |  |  |  |  |  |  |  |  |
| 108                        | 1435.0                           | 1370.29                   | 1.08  |  |  |  |  |  |  |  |  |
| 108A                       | 1433.4                           | 1368.89                   | 1.40  |  |  |  |  |  |  |  |  |
| 109                        | 1431.8                           | 1367.40                   | 1.49  |  |  |  |  |  |  |  |  |
| 110                        | 1430.7                           | 1366.24                   | 1.16  |  |  |  |  |  |  |  |  |
| 110A                       | 1429.0                           | 1364.87                   | 1.37  |  |  |  |  |  |  |  |  |
| 110B                       | 1427.8                           | 1363.86                   | 1.01  |  |  |  |  |  |  |  |  |
| 111                        | 1426.5                           | 1362.55                   | 1.31  |  |  |  |  |  |  |  |  |
| 112                        | 1424.5                           | 1360.40                   | 2.15  |  |  |  |  |  |  |  |  |
| 113                        | 1422.5                           | 1358.50                   | 1.90  |  |  |  |  |  |  |  |  |
| 114                        | 1420.3                           | 1356.50                   | 2.00  |  |  |  |  |  |  |  |  |
| 115                        | 1417.7                           | 1353.85                   | 2.65  |  |  |  |  |  |  |  |  |
| 116                        | 1415.6                           | 1351.83                   | 2.02  |  |  |  |  |  |  |  |  |
| 116A                       | 1413.3                           | 1349.46                   | 2.37  |  |  |  |  |  |  |  |  |
| 117                        | 1410.2                           | 1346.46                   | 3.00  |  |  |  |  |  |  |  |  |
| 117A                       | 1408.5                           | 1344.72                   | 1.74  |  |  |  |  |  |  |  |  |
| 117B                       | 1407.0                           | 1343.30                   | 1.42  |  |  |  |  |  |  |  |  |
| 118                        | 1405.0                           | 1341.40                   | 1.90  |  |  |  |  |  |  |  |  |
| 118A                       | 1403.2                           | 1339.67                   | 1.73  |  |  |  |  |  |  |  |  |
| 118B                       | 1401.6                           | 1338.05                   | 1.62  |  |  |  |  |  |  |  |  |
| 119                        | 1400.4                           | 1336.82                   | 1.23  |  |  |  |  |  |  |  |  |
| 120                        | 1399.5                           | 1335.91                   | 0.91  |  |  |  |  |  |  |  |  |
|                            | 1397.7                           | 1334.37                   | 1.54  |  |  |  |  |  |  |  |  |
|                            | 1395.9                           | 1332.73                   | 1.64  |  |  |  |  |  |  |  |  |
|                            | 1394.3                           | 1330.99                   | 1.74  |  |  |  |  |  |  |  |  |
|                            | 1393.2                           | 1330.18                   | 0.81  |  |  |  |  |  |  |  |  |
|                            | 1391.8                           | 1328.58                   | 1.60  |  |  |  |  |  |  |  |  |
|                            | 1390.0                           | 1326.69                   | 1.89  |  |  |  |  |  |  |  |  |
|                            | A., or =                         | o Dictores                |       |  |  |  |  |  |  |  |  |
|                            | -                                | ge Distance<br>n Sediment | 1.37  |  |  |  |  |  |  |  |  |
|                            | Detweet                          | Jeannent                  |       |  |  |  |  |  |  |  |  |

| Garrison Degradation Reach      |            |                    |  |  |  |  |  |  |  |  |
|---------------------------------|------------|--------------------|--|--|--|--|--|--|--|--|
| Tributary Sediment Range Name & |            |                    |  |  |  |  |  |  |  |  |
| Stream                          | Original   | 1941 River<br>Mile |  |  |  |  |  |  |  |  |
| Knife River                     | K 1        | K-0.5              |  |  |  |  |  |  |  |  |
|                                 | K 2<br>K 3 | K 1.3<br>K 2.5     |  |  |  |  |  |  |  |  |
|                                 | K 4        | K 3.8              |  |  |  |  |  |  |  |  |
|                                 | K 5        | K 6.1              |  |  |  |  |  |  |  |  |

| Garrison Degradation Reach   |                    |                    |  |  |  |  |  |  |  |  |
|------------------------------|--------------------|--------------------|--|--|--|--|--|--|--|--|
| Other Important<br>Locations | 1941<br>River Mile | 1960 River<br>Mile |  |  |  |  |  |  |  |  |
|                              |                    |                    |  |  |  |  |  |  |  |  |
| Stanton Gage                 |                    | 1380.7             |  |  |  |  |  |  |  |  |
| Hensler Gage                 |                    | 1362.8             |  |  |  |  |  |  |  |  |
| Price Gage                   |                    | 1333.8             |  |  |  |  |  |  |  |  |

# ATTACHMENT TO OCT 11TH 2017 EMAIL FROM PRIDAL TO TOSO GA\_Sak\_Survey\_Control\_Data.xlsx.

|                 |              |                     | 1          |                      |                      |                       |                      |                                       |                                  | Update (2010-2012)                              |   |
|-----------------|--------------|---------------------|------------|----------------------|----------------------|-----------------------|----------------------|---------------------------------------|----------------------------------|---|---|
| Range<br>Number | Bank         | Provided<br>Station | Station    | Elevation<br>NAVD 88 | Elevation<br>NGVD 29 | Elevation<br>Provided | Discrepancy<br>Found | SPC (NAD83) Nor<br>Northing           | rth Dakota North 3301<br>Easting | - Description                                   | Remarks   |
| 1690.7          | Left         | 100+00              | 100+00.0   | 2,013.01             | 2,011.24             | 2,011.61              | 0.37                 | 402,325.739                           | 1,086,095.981                    | COE Monument & Carsonite                        | Found 2011, Found 2001  |
| 1690.7          | Left         | 134+00              | 133+98.7   | 1,880.62             | 1,878.86             | 1,879.42              | 0.56                 | 399,867.563                           | 1,083,748.987                    | 2" Pipe & Carsonite                             | Found 2011, Found 2001  |
| 1690.7          | Left         | 139+03.2            | 139+01.6   | 1,879.37             | 1,877.60             | 1,878.12              | 0.52                 | 399,503.674                           | 1,083,401.882                    | 3/4" Pipe & Carsonite                           | Found 2011 (10' from HB), Found 2001  |
| 1690.7          | Right        |                     | 159+31.7   | 1,876.27             | 1,874.50             |                       |                      | 398,035.230                           | 1,082,000.092                    | COE Brass Cap & Carsonite                       | Found 2011  |
| 1690.7          | Right        | 169+07              | 169+01.0   | 1,873.78             | 1,872.01             | 1,872.15              | 0.14                 | 397,334.328                           | 1,081,330.455                    | 3/4" Pipe & Carsonite                           | Found 2011, did not get to 2001   |
| 1690.7          | Right        | 216+71.27           | 216+63.0   | 1,993.22             | 1,991.43             | 1,991.78              | 0.35                 | 393,890.544                           | 1,078,041.636                    | COE Monument & Carsonite                        | Found 2011, did not get to 2001, Found 1987   |
| 1685.8          | Left         | 100+00              |            |                      | -                    | 1,887.99              |                      | · · · · · · · · · · · · · · · · · · · |                                  | COE Monument                                    | Not Found 2011 (did not reset- in field), Did not try to find in                        |
| 1685.8          | Left         |                     | 162+49.5   | 1,875.48             | 1,873.71             | ,                     |                      | 386,406.904                           | 1,090,668.878                    | COE Brass Cap & Carsonite                       | 2001  Found 2011 (at toe of old HB), Set 2001   |
| 1685.8          | Left         | 169+44              | 102 - 10.0 | 1,070.10             | 1,010.11             | 1,869.98              |                      | 500,100.001                           | 1,000,000.070                    | COE Brass Cap                                   | Not Found 2011 (did not reset), Not Found 2001  |
|                 |              |                     | 171+47.2   | 1,873.59             | 1,871.82             |                       | 0.46                 | 205 500 025                           | 1,090,301.051                    |   | Found 2011 (TBM 15' from HB)  |
| 1685.8          | Left<br>Left | 171+44<br>172+60    | 1/1+4/.2   | 1,073.39             | 1,071.02             | 1,872.28              | 0.40                 | 385,588.035                           | 1,090,301.031                    | COE Brass Cap & Carsonite                       | Not Found 2011 (did not reset- in water), Found 2001 COE                                |
| 1685.8          |              |                     | 400 00 =   | 4 000 05             | 4 000 07             | 1,870.64              |                      | 001 501 001                           | 4 000 007 040                    | 3/4" Pipe                                       | brass cap- Probably found the above Brass Cap   |
| 1685.8          | Right        | 183+00              | 183+02.7   | 1,890.65             | 1,888.87             | 1,889.28              | 0.41                 | 384,534.031                           | 1,089,827.619                    | 1" Pipe & Post & Plate                          | Found 2011 (300' from HB), Found 2001, RWE in 1987                                      |
| 1685.8          | Right        | 184+89.4            | 184+92.2   | 1,891.83             | 1,890.05             | 1,890.49              | 0.44                 | 384,361.196                           | 1,089,749.944                    | COE Brass Cap & Carsonite                       | Found 2011, Set 1989  |
| 1685.8          | Right        | 201+00.8            | 201+00.8   | 1,959.78             | 1,958.00             | 1,958.35              | 0.35                 | 382,893.825                           | 1,089,090.751                    | COE Monument & Carsonite                        | Found 2011, Found 2001  |
| 1684.4          | Left         | 20+00               | 20+00.0    | 1,879.57             | 1,877.80             | 1,878.20              | 0.40                 | 386,914.122                           | 1,096,482.634                    | 2" Pipe, Wooden Plate, & Sign Post              | Found 2011 (along side of irrigation road), Found 2001                                  |
| 1684.4          | Left         | 22+83.3             | 22+86.2    | 1,872.58             | 1,870.82             | 1,871.21              | 0.39                 | 386,627.984                           | 1,096,477.628                    | COE Brass Cap & Carsonite                       | Found 2011 (10' from HB), Found 2001, Set in 1989                                       |
| 1684.4          | Right        | 38+57               | 38+53.5    | 1,869.09             | 1,867.33             | 1,867.06              | -0.27                | 385,060.939                           | 1,096,446.663                    | 1-1/2" Pipe & Carsonite &<br>Post & Plate       | Found 2011 (40' from HB), Not Found 2001  |
| 1684.4          | Right        | 40+53               | 40+55.5    | 1,868.46             | 1,866.70             | 1,866.42              | -0.28                | 384,858.999                           | 1,096,442.790                    | COE Brass Cap & Carsonite                       | Found 2011, Set in 1989   |
| 1683.2          | Left         | 21+73               | 21+73.0    | 1,868.45             | 1,866.70             | 1,867.35              | 0.65                 | 383,462.868                           | 1,102,483.757                    | Brass Cap & Carsonite                           | Found 2011, Found 2002  |
| 1683.2          | Left         | 22+45               | 22+43.9    | 1,869.22             | 1,867.47             |                       |                      | 383,397.622                           | 1,102,455.887                    | Carsonite                                       | Found 2011, Set 2002 across from open field on R/B, D/S of<br>Fort Buford               |
| 1683.2          | Left         | 22+83               | 22+82.8    | 1,869.68             | 1,867.93             | 1,868.59              | 0.66                 | 383,362.025                           | 1,102,440.253                    | 1-1/2" Pipe, Carsonite, & Sign Post             | Found 2011 (6' from HB), Found 2002   |
| 1683.2          | Right        | 35+16               |            |                      |                      | 1,875.57              |                      |                                       |                                  | Brass Cap & Carsonite                           | <b>Not Found 2011</b> , Not Found 2001  |
| 1683.2          | Right        |                     | 37+22.8    | 1,879.96             | 1,878.22             |                       |                      | 382,039.805                           | 1,101,869.832                    | COE Brass Cap                                   | Set 2011 - 60' from HB  |
| 1682.1          | Right        | 20+00               | 20+00.0    | 1,891.49             | 1,889.72             | 1,890.20              | 0.48                 | 375,326.081                           | 1,099,217.126                    | 4"x4" Conc. COE Monument w/Chiesled "X"&        | Found 2011  |
| 1682.1          | Right        | 93+34.6             |            |                      |                      | 1,877.99              |                      |                                       |                                  | Carsonite ?? Pipe                               | Not Found 2011 (did not reset- in field)  |
| 1682.1          | Right        |                     | 95+83.2    | 1,873.24             | 1,871.50             |                       |                      | 379,376.844                           | 1,105,627.726                    | Aluminum Cap & Carsonite                        | Set 2011  |
| 1682.1          | Right        | 95+84.0             |            |                      |                      | 1,872.30              |                      |                                       |                                  | ?? Pipe   | Not Found 2011  |
| 1682.1          | Right        | 101+79.5            | 101+78.7   | 1,871.94             | 1,870.20             | 1,870.42              | 0.22                 | 379,695.025                           | 1,106,131.105                    | 3/4" Pipe, Carsonite, &                         | Found 2011, Found 2001  |
| 1682.1          | Left         | 113+65.6            | 113+64.9   | 1,881.70             | 1,879.96             | 1,880.03              | 0.07                 | 380,328.856                           | 1,107,133.840                    | Post & Plate x2<br>3/4" Pipe, Sign Post, Wooden | Found 2011, Not Found 2005- ground frozen, Found 2001                                   |
|                 |              |                     |            |                      |                      |                       |                      |                                       |                                  | Plate, & Carsonite                              |   |
| 1682.1          | Left         | 130+56.6            | 130+55.3   | 1,893.61             | 1,891.87             | 1,892.38              | 0.51                 | 381,231.918                           | 1,108,562.802                    | 4"x4" Conc. Monument & Carsonite                | Found 2011(50' north of Cottonwood Line) Not Found 2002                                 |
| 1681.1          | Left         |                     | 10+00.0    | 1,876.51             | 1,874.77             |                       |                      | 376,022.675                           | 1,108,810.318                    | Hub   | Set 2011 - Hub - 20' from HB  |
| 1681.1          | Left         | 15+34.3             |            |                      |                      | 1,872.31              |                      |                                       |                                  | COE Brass Cap                                   | Not Found 2011, Set 1989  Not Found 2011 (set hub on line 100' from HB), Not Found      |
| 1681.1          | Left         | 20+00               |            |                      |                      | 1,875.36              |                      |                                       |                                  | 2" Pipe   | 2001, Found 1989  |
| 1681.1          | Right        | 33+00               |            |                      |                      | 1,867.05              |                      |                                       |                                  | 1-1/4" Pipe                                     | Not Found 2011 (set hub on line 100' from HB), Not Found 2001,<br>Found 1989            |
| 1681.1          | Right        | 34+79.2             |            |                      |                      | 1,866.34              |                      |                                       |                                  | COE Brass Cap                                   | Not Found 2011, Set in 1989   |
| 1681.1          | Right        |                     | 28+46.9    | 1,871.42             | 1,869.67             |                       |                      | 376,303.197                           | 1,106,984.834                    | Hub   | Set 2011 - Hub - 20' from HB  |
| 1680.0          | Left         | 22+15.08            | 22+15.1    | 1,865.38             | 1,863.65             | 1,864.07              | 0.42                 | 373,419.314                           | 1,111,978.290                    | COE Brass Cap & Carsonite                       | Found 2011, Not Found 2002, Set in 1989   |
| 1680.0          | Left         | 23+81               |            |                      |                      | 1,861.97              |                      |                                       |                                  | 2x2 Wood Hub, near River                        | Not Found 2011 (did not reset), Not Found 2001-believed<br>destroyed                    |
| 1680.0          | Left         | 26+22               | 26+21.2    | 1,865.08             | 1,863.35             | 1,863.00              | -0.35                | 373,072.802                           | 1,112,190.125                    | Aluminum Cap & Carsonite                        | Set 2011  |
| 1680.0          | Right        | 34+82               |            |                      |                      | 1,873.97              |                      |                                       |                                  | COE Brass cap                                   | Not Found 2011 (did not reset-in water), Not Found 2002<br>believed destroyed, Set 1989 |
| 1680.0          | Right        | 35+92               | 35+91.2    | 1,875.37             | 1,873.63             | 1,874.10              | 0.47                 | 372,245.219                           | 1,112,696.133                    | 1-1/4" Pipe & Post & Plate                      | Found 2011 (80' from HB), Found 2002  |
| 1680.0          | Right        |                     | 36+91.8    | 1,875.33             | 1,873.80             |                       |                      | 372,161.282                           | 1,112,751.586                    | COE Brass Cap & Carsonite                       | Found 2011, Set 2010  |
| 1678.5          | Left         | 20+31               | 20+31.0    | 1,884.62             | 1,882.89             | 1,890.58              | 7.69                 | 379,128.149                           | 1,116,169.181                    | COE Brass Cap & Carsonite                       | Found 2011, Found 2002, Found 2001  |
| 1678.5          | Left         | 21+76               | 21+76.0    | 1,877.76             | 1,876.03             | 1,883.80              | 7.77                 | 378,985.289                           | 1,116,194.141                    | COE Brass Cap & Carsonite                       | Found 2011 (also found sign post and carsonite 25'                                      |
| 1678.5          | Right        | 33+05               | 33+05.1    | 1,867.13             | 1,865.40             | 1,866.34              | 0.94                 | 377,873.063                           | 1,116,388.632                    | 2" Pipe & Carsonite                             | offline),Found 2001 Found 2011, Found 2002  |
| 1678.0          | Right        | 171+98              | 171+98.0   | 1,865.53             | 1,863.81             | 1,664.45              | -199.36              | 377,746.930                           | 1,119,647.100                    | 3/4" Pipe & Carsonite                           | Found 2011, Not Found 2002, Found 1988  |
| 1678.0          | Left         | 187+11              | 187+09.9   | 1,871.31             | 1,869.58             | 1,870.24              | 0.66                 | 379,162.375                           | 1,119,115.811                    | 1-1/4" Pipe & Carsonite                         | Found 2011 (25' from HB), Found 2002, Found 1988  |
|                 |              |                     |            |                      |                      | 1,010.24              | 0.00                 |                                       |                                  |   |   |
| 1678.0          | Left         | 188+61.08           | 186+60.2   | 1,886.88             | 1,885.15             | 4.000.00              | 001                  | 379,303.042                           | 1,119,062.663                    | COE Monument & Carsonite                        | Found 2011 (on edge of road), Found 2002, Found 1988                                    |
| 1676.6          | Left         | 18+24.3             | 18+24.3    | 1,870.20             | 1,868.48             | 1,868.82              | 0.34                 | 376,163.478                           | 1,125,950.743                    | COE Brass Cap & Carsonite                       | Found 2011, Not Found 1987  Not Found 2011 (did not reset-in water), Not Found 2002,    |
| 1676.6          | Right        | 41+60               |            |                      |                      | 1,866.94              |                      |                                       |                                  | COE Brass Cap                                   | Set 1989  |
| 1676.6          | Right        | 42+77               | 42+76.6    | 1,865.29             | 1,863.56             | 1,864.31              | 0.75                 | 374,156.329                           | 1,124,541.802                    | 1-1/2" Pipe, Carsonite, & Post & Plate          | Found 2011, Not Found 2002, Found 1988  |
| 1676.6          | Right        |                     | 42+81.0    | 1,869.34             | 1,867.61             |                       |                      | 374,152.276                           | 1,124,539.880                    | COE Brass Cap                                   | Found 2011  Did not current in 2011 Not ED in 2002 Ed 79: Ed 97 Pobuson                 |
| 1675.3          | Left         | 20+00               |            |                      |                      | 1,876.66              |                      |                                       |                                  | 3/4" Pipe                                       | <b>Did not survey in 2011,</b> Not FD in 2002, Fd 78; Fd 87 Between abandoned farm      |
| 1675.3          | Left         | 21+08.5             |            |                      |                      | 1,871.98              |                      |                                       |                                  | COE Brass Cap                                   | Did not survey in 2011, Set in 1989. Not FD in 2002                                     |
| 1675.3          | Right        | 41+19               |            |                      |                      | 1,863.46              |                      |                                       |                                  | 1" Pipe   | <b>Did not survey in 2011,</b> Set in 1978; Not fd in 2002, 87.                         |
| 1674.1          | Right        | 20+00               | 20+00.0    | 2,058.14             | 2,056.39             | 2,056.86              | 0.47                 | 366,976.994                           | 1,132,968.497                    | Conc. COE Monument & Carsonite                  | Found 2011, Found 2002  |
| 1674.1          | Right        | 22+41               |            |                      |                      | 1,869.44              |                      |                                       |                                  | 1" Pipe   | Not Found 2011, Set in 1978: RWE in 1987 @ 22+52: Found 1/2 carsonite on                |
| 1674.1          | Left         | 33+80               |            |                      |                      | 1,862.35              |                      |                                       |                                  | 1" Pipe   | Not Found 2011 (did not reset - point falls in low area), Fd 78; LWE in 1               |
| 1674.1          | Left         | 35+27               |            |                      |                      | 1,866.70              |                      |                                       |                                  | ?? Pipe   | Not Found 2011, Set 1972 Not Fd 02  |
| 1674.1          | Left         | 36+49               | 36+54.9    | 1,868.90             | 1,867.16             | 1,867.72              | 0.56                 | 368,535.950                           | 1,132,413.093                    | 1-1/4" Pipe & Post & Plate                      | Found 2011, Not Found 2002  |
|                 |              |                     |            | ,                    | ,                    | ,                     |                      | ,                                     | ,,                               |   |   |

| 1674.1   | Left                                    | 37+13.6   |  |  |  | 1,874.52   |   |   |   | ?? Pipe  | Not Found 2011, Not Fd 02  |
|--|---|---|--|--|--|--|---|---|---|--|--|
| 1674.1   | Left                                    | 38+34.9   |  |  |  | 1,872.72   |   |   |   | ?? Pipe  | Not Found 2011, Not Fd 02  |
| 1674.1   | Left                                    | 43+19.8   | 43+19.6  | 1,876.74   | 1,875.00   | 1,875.95   | 0.95                                      | 369,161.461   | 1,132,188.272   | 1" Pipe & Carsonite  | Found 2011 (Top of old RR ditch), Not Found 2002   |
| 1673.4   | Left                                    |   | 10+00.0  | 1,872.26   | 1,870.53   | ,  |   | 369,962.205   | 1,135,396.428   | Hub  | Set 2011 - Hub - 20' from HB   |
| 1673.4   | Left                                    | 20+00   |  | .,   | ,,   | 1,870.08   |   | ,   | ,,,   | 3/4" Pipe  | Not Found 2011 Believed destroyed. Not fd in 2002  |
| 1673.4   | Left                                    | 21+43   |  |  |  | 1869.24  |   |   |   | 3/4" Pipe  | Not Found 2011, Fd 87, 78; LT HB in 1975 21+86. Not FD   |
| 1673.4   | Right                                   | (21+55.3)<br>42+72  |  |  |  | (1870.2)<br>1,867.82   |   |   |   | 1-1/4" Pipe  | in 2002<br><b>Not Found 2011,</b> Fd 87, 78; RT HB in 1975 42+55. Not FD in 2002   |
|  | -                                       | 42+12   |  |  | 4 000 40   | 1,007.02   |   |   | 4 400 704 000   | ·  | believed to  |
| 1673.4   | Right                                   |   | 33+79.2  | 1,864.87   | 1,863.13   |  |   | 368,034.819   | 1,136,791.398   | Hub  | Set 2011 - Hub - 20' from HB   |
| 1672.6   | Left                                    | 20+78   | 20+78.0  | 1,871.30   | 1,869.58   | 1,870.17   | 0.59                                      | 372,607.793   | 1,138,809.831   | 1-1/4" Pipe & Post & Plate   | Found 2011, Found 2002   |
| 1672.6   | Left                                    | 30+30   |  |  |  | 1,863.80   |   |   |   | 2x2 Wood Hub w/Post and Plate  | Not Found 2011 (did not reset)   |
| 1672.6   | Island                                  | 42+36   |  |  |  | 1,862.50   |   |   |   | 2x2 Wood Hub w/Post and Plate  | Not Found 2011 (did not reset at HB - point already there,<br>Not Found 2002, Found 1987   |
| 1672.6   | Right                                   | 59+26   | 59+15.7  | 1,871.86   | 1,870.13   | 1,870.82   | 0.69                                      | 368,999.367   | 1,140,116.407   | 1-1/2" Pipe, Carsonite, & Post & Plate   | Found 2011, Found 2002, Found 1987   |
| 1672.6   | Right                                   | 60+56   | 59+95.5  | 1,870.86   | 1,869.13   | 1,869.62   | 0.49                                      | 368,924.529   | 1,140,144.039   | COE Brass Cap & Carsonite  | Found 2011 (100' from HB), Set 2002  |
| 1672.6   | Right                                   | 61+62.2   | 61+50.1  | 1,873.02   | 1,871.28   | 1,871.80   | 0.52                                      | 368,779.076   | 1,140,196.395   | 1-1/4" Pipe & Post & Plate   | Found 2011, Found 2002, Found 1987   |
| 1671.6   | Right                                   |   | 09+88.5  | 2,106.69   | 2,104.97   |  |   | 369,917.729   | 1,145,486.098   | Rebar & Brass Cap & Carsonite  | Set 2011   |
| 1671.6   | Right                                   | 10+00   |  |  |  | 1,923.14   |   |   |   | COE Monument   | Found destroyed 2011, Not looked for in 2002   |
| 1671.6   | Right                                   | 13+06   |  |  |  | 1,911.48   |   |   |   | ?? Pipe  | Not Found 2011 (did not reset), Not looked for in 2002   |
| 1071.6   | Right                                   |   | 37+43.6  | 1,868.32   | 1,866.60   |  |   | 372,360.093   | 1,144,211.203   | Rebar & Brass Cap & Carsonite  | Set 2011 - 50' from HB   |
| 1671.6   | Right                                   | 38+48   |  | •  |  | 1,871.36   |   |   |   | Rebar & Cap & Carsonite  | Not Found 2011, Not Found 2002, Found 1987   |
| 1671.6   | Left                                    | 65+56.7   | 65+56.9  | 1,871.39   | 1,869.68   | 1,870.27   | 0.59                                      | 374,850.365   | 1,142,902.284   | 1" Pipe & Post & Plate   | Found 2011, Not Found 2002, Found 1987   |
| 1671.6   | Left                                    | 66+20.9   | 66+20.9  | 1,873.02   | 1,871.31   | 1,872.07   | 0.76                                      | 374,000.305   | 1,142,872.504   | COE Monument & Post & Plate  | Found 2011, Not Found 2002, Full 1987  |
|  |   |   | UU+2U.Y  | 1,010.02   | 1,071.31   |  | 0.70                                      | J14,3UI.UZZ   | 1,142,072.004   | & Carsonite  |  |
| 1671.6   | Left                                    | 180+69.9  | 400 01 =   | 4 000  | 4001   | 1,888.21   |   | 205 252 2 :-  | 4 400 00  | Data a David Co. Co  | Not Found 2011, Added 3/8/02 from old survey notes. LJM  |
| 1671.6   | Left                                    |   | 180+81.7   | 1,885.96   | 1,884.28   |  |   | 385,059.346   | 1,137,554.495   | Rebar & Brass Cap & Carsonite  | Set 2011 - 20' North of Ditch  Not Found 2011 (did not reset- in field), Believed destroyed  |
| 1671.2   | Left                                    | 15+61.7   |  |  |  | 1,866.11   |   |   |   | 3/4" Pipe  | in 1989  |
| 1671.2   | Left                                    | 20+00   | 20+00.0  | 1,868.35   | 1,866.65   | 1,867.66   | 1.01                                      | 376,383.887   | 1,144,331.104   | 1-1/4" Pipe & Post & Plate   | Found 2011 (on old LB), Not Found 2002, Found 1987   |
| 1671.2   | Right                                   | 43+74   |  |  |  | 1,868.26   |   |   |   | 1" Pipe  | Not Found 2011, Found 2002, Found 1987   |
| 1671.2   | Right                                   |   | 44+31.4  | 1,868.90   | 1,867.20   |  |   | 375,324.515   | 1,146,519.576   | Rebar & Brass Cap & Carsonite  | Set 2011 - 50' from HB   |
| 1671.2   | Right                                   | 46+27   | 46+25.4  | 1,868.76   | 1,867.06   | 1,867.66   | 0.60                                      | 375,240.025   | 1,146,694.191   | COE Brass Cap & Carsonite  | Found 2011, Set 2002   |
| 1671.2   | Right                                   | 55+85.1   | 55+83.9  | 1,869.09   | 1,867.39   | 1,867.83   | 0.44                                      | 374,822.122   | 1,147,556.840   | COE Brass Cap & Carsonite  | Found 2011, Found 2002, Set 1989   |
| 1670.2   | Left                                    |   | 16+62.7  | 1,862.90   | 1,861.22   |  |   | 377,435.415   | 1,149,409.419   | COE Brass Cap  | Found 2011 (10' from HB)   |
| 1670.2   | Left                                    | 18+39   |  |  |  | 1,861.51   |   |   |   | 1-1/4" Pipe  | Not Found 2011 (did not reset) Fd 02, 87, 78; 1.5' below ground in 78;   |
| 1670.2   | Left                                    | 18+44   |  |  |  | 1,865.45   |   |   |   | 1/2" Cap Screw in 18" Boxelder 6'<br>D/S of line   | Not Found 2011 Fd 02, 78; Stake nailed in tree in 78; LT HB in 1975 19+94  |
| 1670.2   | Right                                   | 33+00   | 33+01.8  | 1,861.20   | 1,859.51   | 1,859.85   | 0.34                                      | 375,798.369   | 1,149,326.017   | 1-1/4" Pipe & Carsonite  | Found 2011, Found 2002, Found 1987   |
| 1670.2   | Right                                   | 34+85.2   | 34+85.2  | 1,860.82   | 1,859.13   | 1,859.60   | 0.47                                      | 375,615.241   | 1,149,316.697   | COE Brass Cap & Carsonite  | Found 2011, Set 1989   |
| 1668.8   | Right                                   | 10+00   | 10+00.0  | 1,924.52   | 1,922.81   | 1,923.14   | 0.33                                      | 372,667.558   | 1,153,453.642   | Monument & Sign Post   | Found 2011, Found 2002, Found 1987   |
| 1668.8   | Right                                   | 23+25   |  | .,   | .,   | .,   |   | ,   | ,,,   | R.R. Spike in 12" tree with Marker   | Not Found 2011 Fd 02, 78; - 13.4' U/S of line  |
| 1668.8   | Right                                   | 23+03.9   | 23+00.7  | 1,867.99   | 1,866.23   | 1,866.50   | 0.27                                      | 373,825.179   | 1,152,854.513   | 3/4" Pipe, Carsonite, & Post & Plate   | Found 2011, Found 2002, Found 1987   |
|  | -                                       |   |  |  |  |  |   |   |   |  |  |
| 1668.8   | Left                                    | 39+42   | 39+37.8  | 1,860.25   | 1,858.55   | 1,858.41   | -0.14                                     | 375,280.379   | 1,152,105.778   | Post & Carsonite   | Found 2011 (on RB of main channel), Found 1987   |
| 1668.8   | Left                                    |   |  |  | 1,859.00   | 1,858.87   |   |   |   |  |  |
|  | Lon                                     | 39+65   | 39+62.3  | 1,860.70   | .,   | 1,000.01   | -0.13                                     | 375,300.750   | 1,152,090.792   | COE Brass Cap & Carsonite  | Found 2011(on RB of main channel), Set 1987  |
| 1668.8   | Left                                    | 39+65<br>51+51  |  | 1,000.70   | .,   | 1,862.56   | -0.13                                     |   |   | COE Brass Cap & Carsonite  R.R. Spike - Post & Plate   | Found 2011(on RB of main channel). Set 1987  Not Found 2011 FD '87 - In 14* Boxelder - 10' D/S of P&P - 3' Stump FD '78  |
|  |   |   | 39+62.3<br>52+71.8   | 1,865.13   | 1,863.44   |  | 0.56                                      | 375,300.750<br>376,463.916  | 1,152,090.792<br>1,151,491.017  |  |  |
| 1668.8   | Left                                    | 51+51   |  | 1,865.13   | 1,863.44   |  |   |   |   | R.R. Spike - Post & Plate  | Not Found 2011 FD '87 - In 14" Boxelder - 10' D/S of P&P - 3' Stump FD '78   |
| 1668.8<br>1668.8   | Left<br>Left                            | 51+51<br>52+83  |  | 1,865.13   | 1,863.44   |  |   |   |   | R.R. Spike - Post & Plate Post and Marker & Carsonite  | Not Found 2011 FD '87 - In 14" Boxelder - 10" D/S of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987   |
| 1668.8<br>1668.8<br>1668.8   | Left<br>Left<br>Left                    | 51+51<br>52+83<br>87+54   |  | 1,865.13<br>1,869.36   | 1,863.44   | 1,862.56<br>1,864.00   |   |   |   | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post   | Not Found 2011 FD '87 - In 14" Boxelder - 10' DIS of P&P - 3' Stump FD '78 Found 2011 (6' from old LB), Found 1987 Not Found 2011 FD '87 - For line only   |
| 1668.8<br>1668.8<br>1668.8<br>1668.8   | Left<br>Left<br>Left<br>Left            | 51+51<br>52+83<br>87+54<br>150+83   | 52+71.8  | 1,865.13   | 1,863.44   | 1,862.56<br>1,864.00<br>1,861.60   | 0.56                                      | 376,463.916   | 1,151,491.017   | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/6" Rebar & Carsonite 4"x4" Conc. Monument w/Chieseled "X" &  | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel   |
| 1668.8<br>1668.8<br>1668.8<br>1668.8   | Left<br>Left<br>Left<br>Left            | 51+51<br>52+83<br>87+54<br>150+83<br>185+09   | 52+71.8<br>185+05.9  | 1,865.13<br>1,869.36   | 1,863.44<br>1,867.70   | 1,862.56<br>1,864.00<br>1,861.60<br>1,886.37   | 0.56                                      | 376,463.916<br>388,211.072  | 1,151,491.017<br>1,145,397.658  | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/6" Rebar & Carsonite   | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1987   |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8   | Left Left Left Left Left Left           | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15   | 52+71.8<br>185+05.9<br>240+10.3  | 1,865.13<br>1,869.36<br>1,887.79   | 1,863.44<br>1,867.70<br>1,886.12   | 1,862.56<br>1,864.00<br>1,861.60<br>1,886.37<br>1,867.12   | 0.56<br>18.67<br>-19.00                   | 376,463.916<br>388,211.072<br>393,109.141   | 1,151,491.017<br>1,145,397.658<br>1,142,885.135   | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/8" Reber & Carsonite 4"4" Conc. Monument wiChieseled "X" & Post & Plate  | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (on old LB), Set 1987  |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8   | Left Left Left Left Left Left Left      | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15   | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4   | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96   | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27   | 1,862.56<br>1,864.00<br>1,861.60<br>1,886.37<br>1,867.12   | 0.56<br>18.67<br>-19.00                   | 376,463,916<br>388,211.072<br>393,109.141<br>375,770.10   | 1,151,491.017<br>1,145,397.658<br>1,142,885.135<br>1,154,355.24   | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate Si8" Reber & Carsonite 4"x4" Conc. Monument wiChieseled "X" & Post & Plate Brass Cap; carsonite  | Not Found 2011 FD '87 - In 14" Boxelider - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (on old LB), Set 1987 Found 2011, Set 1989. Fd 2002   |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5   | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4  | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4   | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96   | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27   | 1,862.56<br>1,864.00<br>1,861.60<br>1,886.37<br>1,867.12   | 0.56<br>18.67<br>-19.00                   | 376,463,916<br>388,211.072<br>393,109.141<br>375,770.10   | 1,151,491.017<br>1,145,397.658<br>1,142,885.135<br>1,154,355.24   | RR. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate Sit® Reber & Carsonite 4"x4" Conc. Monument wiChieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree   | Not Found 2011 FD '87 - In 14' Boxelider - 10' DIS of P&P - 3' Stump FD '78 Found 2011 (6' from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1997 Found 2011 (in old LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011 (measured top of post for location) Not Found 2011,Fd 02;  |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5<br>1665.5   | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4  | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4   | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96   | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27   | 1,862.56<br>1,864.00<br>1,861.60<br>1,866.37<br>1,867.12<br>1,861.89                                     | 0.56<br>18.67<br>-19.00                   | 376,463,916<br>388,211.072<br>393,109.141<br>375,770.10   | 1,151,491.017<br>1,145,397.658<br>1,142,885.135<br>1,154,355.24   | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/6" Rebar & Carsonite 4"x4" Conc. Monument w/Chieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree R.R. Spike in tree, 8.5 ft U/S of line   | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (on old LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011 (measured top of post for location) Not Found 2011, Fd 02; Not Found 2011, Fd 02, 87, 78  |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.5<br>1665.5<br>1665.5<br>1665.5   | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96  | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4   | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96   | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27   | 1,862.56<br>1,864.00<br>1,861.60<br>1,886.37<br>1,867.12   | 0.56<br>18.67<br>-19.00                   | 376,463,916<br>388,211.072<br>393,109.141<br>375,770.10   | 1,151,491.017<br>1,145,397.658<br>1,142,885.135<br>1,154,355.24   | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/6" Rebar & Carsonite 4"x4" Conc. Monument w/Chieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree R.R. Spike in tree, 8.5 ft U/S of line Brass cap   | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (on old LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, Imeasured top of post for location) Not Found 2011, Fd 02; Not Found 2011, Fd 02, 87, 78 Not Found 2011 ( did not reset under water), Set 1989   |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5   | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96<br>39+47                               | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4<br>19+98.9                                  | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96<br>1,861.60                                     | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27<br>1,859.91                                     | 1,862.56<br>1,864.00<br>1,861.60<br>1,866.37<br>1,867.12<br>1,861.89                                     | 0.56<br>18.67<br>-19.00<br>-0.62          | 376,463,916<br>368,211,072<br>393,109,141<br>375,770,10<br>375,634,14   | 1,151,491,017<br>1,145,397,658<br>1,142,885,135<br>1,154,355,24<br>1,154,315,92   | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 516" Rebar & Carsonite 4"x4" Conc. Monument w/Chieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree R.R. Spike in tree, 8.5 ft U/S of line Brass cap Carsonite for line  | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/IB Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (no old LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, Measured top of post for location) Not Found 2011, Fd 02; Not Found 2011, Fd 02, 87, 78 Not Found 2011, Fd 02 id not reset under water). Set 1989 Not Found 2011, FD 2002   |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5   | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96  | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4<br>19+98.9                                  | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96<br>1,861.60                                     | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27<br>1,869.91                                     | 1,862.56<br>1,864.00<br>1,861.60<br>1,866.37<br>1,867.12<br>1,861.89                                     | 0.56<br>18.67<br>-19.00                   | 376,463,916<br>388,211,072<br>393,109,141<br>375,770,10<br>375,634,14<br>373,660,91                             | 1,151,491,017<br>1,145,397,658<br>1,142,885,135<br>1,154,385,24<br>1,154,315,92   | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/8" Rebar & Carsonite 4"x4" Conc. Monument w/Chieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree R.R. Spike in tree, 8.5 ft U/S of line Brass cap Carsonite for line 1 1/2" Pipe  | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/IB Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (no old LB), Set 1987 Found 2011 (ne ld LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, Fd 02; Not Found 2011, Fd 02, 87, 78 Not Found 2011, FD 2002 Found 2011, FD 2002 Found 2011 (under water), Fd 02, 87, 78  |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5   | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96<br>39+47                               | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4<br>19+98.9                                  | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96<br>1,861.60                                     | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27<br>1,859.91                                     | 1,862.56<br>1,864.00<br>1,861.60<br>1,866.37<br>1,867.12<br>1,861.89                                     | 0.56<br>18.67<br>-19.00<br>-0.62          | 376,463,916<br>368,211,072<br>393,109,141<br>375,770,10<br>375,634,14   | 1,151,491,017<br>1,145,397,658<br>1,142,885,135<br>1,154,355,24<br>1,154,315,92   | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 516" Rebar & Carsonite 4"x4" Conc. Monument w/Chieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree R.R. Spike in tree, 8.5 ft U/S of line Brass cap Carsonite for line  | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/IB Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (no old LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, Measured top of post for location) Not Found 2011, Fd 02; Not Found 2011, Fd 02, 87, 78 Not Found 2011, Fd 02 id not reset under water). Set 1989 Not Found 2011, FD 2002   |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5   | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96<br>39+47                               | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4<br>19+98.9                                  | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96<br>1,861.60                                     | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27<br>1,869.91                                     | 1,862.56<br>1,864.00<br>1,861.60<br>1,866.37<br>1,867.12<br>1,861.89                                     | 0.56<br>18.67<br>-19.00<br>-0.62          | 376,463,916<br>388,211,072<br>393,109,141<br>375,770,10<br>375,634,14<br>373,660,91                             | 1,151,491,017<br>1,145,397,658<br>1,142,885,135<br>1,154,385,24<br>1,154,315,92   | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/8" Rebar & Carsonite 4"x4" Conc. Monument w/Chieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree R.R. Spike in tree, 8.5 ft U/S of line Brass cap Carsonite for line 1 1/2" Pipe  | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/IB Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (no old LB), Set 1987 Found 2011 (ne ld LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, Fd 02; Not Found 2011, Fd 02, 87, 78 Not Found 2011, FD 2002 Found 2011, FD 2002 Found 2011 (under water), Fd 02, 87, 78  |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5   | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96<br>39+47                               | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4<br>19+98.9<br>40+53.8<br>40+83.7            | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96<br>1,861.60                                     | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27<br>1,859.91<br>1,863.18<br>1,868.04             | 1,862.56<br>1,864.00<br>1,861.60<br>1,866.37<br>1,867.12<br>1,861.89                                     | 0.56<br>18.67<br>-19.00<br>-0.62          | 376,463,916<br>388,211.072<br>393,109.141<br>375,770.10<br>375,634.14<br>373,660.91<br>373,632.22               | 1,151,491,017<br>1,145,397,658<br>1,142,885,135<br>1,154,335,24<br>1,154,315,92<br>1,153,742,35<br>1,153,742,35                 | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/6" Rebar & Carsonite 4"x4" Conc. Monument w/Chieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree R.R. Spike in tree, 8.5 ft U/S of line Brass cap Carsonite for line 1 1/2" Pipe Aluminum Cap; carsonite  | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/IB Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (no old LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, Set 1989. Fd 2002 Found 2011, Fd 02; Not Found 2011, Fd 02, 87, 78 Not Found 2011, FD 2002 Found 2011 (under water), Fd 02, 87, 78 Set 2011   |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5                     | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96<br>39+47                               | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4<br>19+98.9<br>40+53.8<br>40+83.7            | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96<br>1,861.60                                     | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27<br>1,859.91<br>1,863.18<br>1,868.04             | 1,862.56<br>1,864.00<br>1,861.60<br>1,866.37<br>1,867.12<br>1,861.89                                     | 0.56<br>18.67<br>-19.00<br>-0.62          | 376,463,916<br>388,211.072<br>393,109.141<br>375,770.10<br>375,634.14<br>373,660.91<br>373,632.22               | 1,151,491,017<br>1,145,397,658<br>1,142,885,135<br>1,154,335,24<br>1,154,315,92<br>1,153,742,35<br>1,153,742,35                 | R.R. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/6" Rebar & Carsonite 4"x4" Conc. Monument w/Chieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree R.R. Spike in tree, 8.5 ft U/S of line Brass cap Carsonite for line 1 1/2" Pipe Aluminum Cap; carsonite Concrete Monument  | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (no old LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, Reasured top of post for location) Not Found 2011, Fd 02; Not Found 2011, Fd 02, 87, 78 Not Found 2011, FD 2002 Found 2011 (id not reset under water), Set 1989 Not Found 2011, FD 2002 Found 2011 (under water), Fd 02, 87, 78 Set 2011 Found 2011  |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5           | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96<br>39+47<br>40+56                      | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4<br>19+98.9<br>40+53.8<br>40+83.7<br>50+88.3 | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96<br>1,861.60<br>1,864.89<br>1,869.74<br>1,924.52 | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27<br>1,859.91<br>1,863.18<br>1,868.04<br>1,922.81 | 1,862.56<br>1,864.00<br>1,861.60<br>1,866.37<br>1,867.12<br>1,861.89<br>1,862.35<br>1,860.44<br>1,863.75 | 0.56<br>18.67<br>-19.00<br>-0.62          | 376,463,916<br>388,211,072<br>393,109,141<br>375,770.10<br>375,634.14<br>373,660.91<br>373,632.22<br>372,667.56 | 1,151,491,017<br>1,145,397,658<br>1,142,885,135<br>1,154,365,24<br>1,154,315,92<br>1,153,742,35<br>1,153,733,99<br>1,153,733,84 | RR. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/6" Rebar & Carsonite 4"x4" Conc. Monument w/Chieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree RR. Spike in tree, 8.5 ft U/S of line Brass cap Carsonite for line 1 1/2" Pipe Aluminum Cap; carsonite Concrete Monument Red property boundary cap  | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (no ld LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, Reasured top of post for location) Not Found 2011, Fd 02, 87, 78 Not Found 2011, Fd 02, 87, 78 Not Found 2011 (idi not reset under water), Set 1989 Not Found 2011 (under water), Fd 02, 87, 78 Set 2011 Found 2011 Not Found 2011  |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5           | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96<br>39+47<br>40+56                      | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4<br>19+98.9<br>40+53.8<br>40+83.7<br>50+88.3 | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96<br>1,861.60<br>1,864.89<br>1,869.74<br>1,924.52 | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27<br>1,859.91<br>1,863.18<br>1,868.04<br>1,922.81 | 1,862.56<br>1,864.00<br>1,861.60<br>1,886.37<br>1,867.12<br>1,861.89<br>1,862.35<br>1,860.44<br>1,863.75 | 0.56<br>18.67<br>-19.00<br>-0.62          | 376,463,916<br>388,211,072<br>393,109,141<br>375,770.10<br>375,634.14<br>373,660.91<br>373,632.22<br>372,667.56 | 1,151,491,017<br>1,145,397,658<br>1,142,885,135<br>1,154,365,24<br>1,154,315,92<br>1,153,742,35<br>1,153,733,99<br>1,153,733,84 | RR. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/8" Rebar & Carsonite 4"x4" Conc. Monument wiChieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree R.R. Spike in tree, 8.5 ft U/S of line Brass cap Carsonite for line 11/2" Pipe Aluminum Cap; carsonite Concrete Monument Red property boundary cap Brass Cap; carsonite   | Not Found 2011 FD '87 - In 14" Boxelder - 10" DIS of P&P - 3" Stump FD '78 Found 2011 (6" from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Felev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (no ld LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, Ge 2011, Fd 02; Not Found 2011, Fd 02, 87, 78 Not Found 2011, Fd 02, 87, 78 Not Found 2011 (idd not reset under water), Set 1989 Not Found 2011 (under water), Fd 02, 87, 78 Set 2011 Found 2011  |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1666.5 | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+80<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96<br>39+47<br>40+56                                | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4<br>19+98.9<br>40+53.8<br>40+83.7<br>50+88.3 | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96<br>1,861.60<br>1,864.89<br>1,869.74<br>1,924.52 | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27<br>1,859.91<br>1,863.18<br>1,868.04<br>1,922.81 | 1,862.56<br>1,864.00<br>1,861.60<br>1,886.37<br>1,867.12<br>1,861.89<br>1,862.35<br>1,860.44<br>1,863.75 | 0.56<br>18.67<br>-19.00<br>-0.62          | 376,463,916<br>388,211,072<br>393,109,141<br>375,770.10<br>375,634.14<br>373,660.91<br>373,632.22<br>372,667.56 | 1,151,491,017<br>1,145,397,658<br>1,142,885,135<br>1,154,365,24<br>1,154,315,92<br>1,153,742,35<br>1,153,733,99<br>1,153,733,84 | RR. Spike - Post & Plate Post and Marker & Carsonite Steel Fence Post Post & Plate 5/8" Rebar & Carsonite 4"x4" Conc. Monument wiChieseled "X" & Post & Plate Brass Cap; carsonite Carsonite; P&P Marker on Tree RR. Spike in tree, 8.5 ft U/S of line Brass cap Carsonite for line 1 1/2" Pipe Aluminum Cap; carsonite Concrete Monument Red property boundary cap Brass Cap; carsonite 1" Pipe                                 | Not Found 2011 FD '87 - In 14' Boxelder - 10' DIS of P&P - 3' Stump FD '78 Found 2011 (6' from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (no old LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, Get 2020 Found 2011, Fd 02; R7, 78 Not Found 2011, Fd 02, 87, 78 Not Found 2011 (in did not reset under water), Set 1989 Not Found 2011 (in der water), Fd 02, 87, 78 Set 2011 Found 2011 (inder water), Fd 78; Not Fd 87, 02  |
| 1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.8<br>1668.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1665.5<br>1666.5<br>1666.5 | Left Left Left Left Left Left Left Left | 51+51<br>52+83<br>87+54<br>150+83<br>185+09<br>240+15<br>18+57.4<br>19+88<br>20+00<br>39+44.96<br>39+44.96<br>17+65<br>20+00<br>22+30 | 52+71.8<br>185+05.9<br>240+10.3<br>18+57.4<br>19+98.9<br>40+53.8<br>40+83.7<br>50+88.3 | 1,865.13<br>1,869.36<br>1,887.79<br>1,862.96<br>1,861.60<br>1,864.89<br>1,869.74<br>1,924.52 | 1,863.44<br>1,867.70<br>1,886.12<br>1,861.27<br>1,869.91<br>1,863.18<br>1,868.04<br>1,922.81 | 1,862.56<br>1,864.00<br>1,864.00<br>1,866.37<br>1,867.12<br>1,861.89<br>1,862.35<br>1,860.44<br>1,863.75 | 0.56<br>18.67<br>-19.00<br>-0.62<br>-0.57 | 376,463,916  388,211,072  393,109,141  375,770.10  375,634.14  373,660.91  373,632.22  372,667.56  377,076.48   | 1,151,491,017<br>1,145,397,658<br>1,142,885,135<br>1,154,355,24<br>1,154,315,92<br>1,153,742,35<br>1,153,733,99<br>1,153,453,64 | RR. Spike - Post & Plate  Post and Marker & Carsonite  Steel Fence Post  Post & Plate  5/8" Rebar & Carsonite  4"x4" Conc. Monument wiChieseled "X" & Post & Plate  Brass Cap; carsonite  Carsonite; P&P  Marker on Tree  R.R. Spike in tree, 8.5 ft U/S of line  Brass cap  Carsonite for line  1 1/2" Pipe  Aluminum Cap; carsonite  Concrete Monument  Red property boundary cap  Brass Cap; carsonite  1" Pipe  Hub and Post | Not Found 2011 FD '87 - In 14' Boxelder - 10' DIS of P&P - 3' Stump FD '78 Found 2011 (6' from old LB), Found 1987 Not Found 2011 FD '87 - For line only Not Found 2011 FD '87 - For line only Not Found 2011 FD '88 - Elev to top of post - R/B Old River Channel Found 2011 (in old river channel), Found 1987 Found 2011 (no old LB), Set 1987 Found 2011, Set 1989. Fd 2002 Found 2011, General Elevation of Post for location) Not Found 2011, Fd 02; 87, 78 Not Found 2011, Fd 02, 87, 78 Not Found 2011 (idi not reset under water), Set 1989 Not Found 2011 (idi not reset under water) Set 2011 Found 2011 Found 2011 Found 2011 Found 2011 Found 2011 Not Found 2011, Set in 1987, NOT FD 10 Not Found 2011, Fd 78; Not Fd 87, 02 Not Found 2011, Fd 78; Not Fd 87, 02 |

| 1663.9 | Right | 20+00              | 20+00.0  | 1,876.59 | 1,874.90 | 1,875.35             | -0.45 | 379,044.73 | 1,160,694.80 | Concrete Monument; P/P      | Found 2011, Fd 10   |
|--------|-------|--------------------|----------|----------|----------|----------------------|-------|------------|--------------|-----------------------------|---|
| 1663.9 | Right | 20+99              |          |          |          |                      |       |            |              | Post and Plate for line     | Not Found 2011 (destroyed falls in water)                     |
| 1663.9 | Left  | 33+59              |          |          |          | 1,858.59             |       |            |              | Brass Cap                   | Not Found in 2011, Set in 1987; Not FD 2002 or 2010           |
| 1633.9 | Left  |                    | 34+83.0  | 1,867.79 | 1,866.11 |                      |       | 380,232.59 | 1,159,806.93 | Aluminum Cap; carsonite     | Set in 2011   |
| 1663.9 | Left  | 34+83              |          |          |          | 1,867.97             |       |            |              | 1" Pipe                     | Not Found 2011, Fd 78; Not FD 2002 or 2010                    |
| 1663.9 | Left  | 40+00              | 40+03.5  | 1,869.58 | 1,867.90 | 1,868.64             | -0.74 | 380,649.54 | 1,159,495.31 | 1 1/4" Pipe                 | Found 2011. NOT FD 10   |
| 1663.9 |       | 190+30.7           | 40+00.0  | 1,009.30 | 1,007.50 |                      | *0.74 | 300,043.34 | 1,135,453.31 | 1 1/4 Fipe                  | ,   |
|        | Left  | 190+30.7           |          |          |          | 1,860.76             |       |            |              |                             | Not Found 2011 (falls in farmed field, did not reset)         |
| 1663.9 | Left  |                    | 224+11.0 | 1,883.08 | 1,881.43 |                      |       | 395,393.65 | 1,148,475.07 | Brass Cap; carsonite        | Set 2011 (edge of farmed field)                               |
| 1663.9 | Left  | 226+14.7           |          |          |          | 1,884.46             |       |            |              | Monument                    | Not Found 2011 (stationing falls in farmed field)             |
| 1662.9 | Left  | 12+90.5<br>20+00   | 12+90.5  | 1,865.23 | 1,863.56 | 1,864.13<br>1867.51  | -0.57 | 384,881.94 | 1,161,267.03 | Rebar; Carsonite            | Found 2011, Set 1989. FD in 2002 a reber w/yellow cap         |
| 1662.9 | Left  | (19+97.5)          |          |          |          | (1866.8)             |       |            |              | 1 1/2" Pipe                 | Not Found 2011, Fd 87, 78 Believed destroyed by 2002          |
| 1662.9 | Left  |                    | 20+55.0  | 1,868.32 | 1,866.65 |                      |       | 384,740.91 | 1,162,018.45 | Aluminum Cap; carsonite     | Set 2011  |
| 1662.9 | Right | 30+33              | 30+33.0  | 1,874.57 | 1,872.89 | 1,873.42             | -0.53 | 384,560.58 | 1,162,979.66 | Brass Cap; P/P              | Found 2011, Fd 02   |
| 1662.9 | Right | 31+72              | 31+72.2  | 1,867.32 | 1,865.64 | 1,856.92             | 8.72  | 384,534.88 | 1,163,116.47 | Brass Cap; carsonite        | Found 2011, Set 2002  |
| 1662.9 | Right | 32+11              | 32+10.5  | 1,872.78 | 1,871.11 | 1,871.77             | -0.66 | 384,527.86 | 1,163,154.06 | 1 1/2" Pipe; P/P            | Found 2011, Fd 02, 87   |
| 1661.9 | Left  |                    | 99+99.8  | 1,860.35 | 1,858.69 |                      |       | 389,179.49 | 1,162,306.20 | Brass Cap; carsonite        | Set in 2011   |
| 1661.9 | Left  | 100+00             |          |          |          | 1,861.54             |       |            |              | Monument                    | Not found 2011, Bent in 1975, Fd 87. Did not Find 2002        |
| 1661.9 | Left  | 103+48             |          |          |          |                      |       |            |              | Post and Marker             | Not Found 2011, Line post Fd 87. Did not Find 2002            |
| 1661.9 | Right | 124+81.2           | 124+81.4 | 1,866.07 | 1,864.41 | 1,864.85             | -0.44 | 389,380.86 | 1,164,779.69 | Brass Cap; carsonite        | Found 2011, Fd 10   |
| 1661.9 | Right | 133+39.7           | 133+39.7 | 1,866.78 | 1,865.12 | 1,865.41             | -0.29 | 389,450.51 | 1,165,635.13 | Brass Cap; P/P              | Found 2011, Fd 02, 87, 78; Common w/ 1661.3 RT Monument       |
| 1661.3 | Right | 19+96.4            | 19+96.4  | 1,949.16 | 1,947.49 | 1,947.89             | -0.40 | 387,728.20 | 1,167,014.66 | Concrete Monument; P/P      | Found 2011, Fd '10; common with Rg 1659.0 Missouri River Part |
| 1661.3 | Right | 42+03.7            | 42+03.1  | 1,866.78 | 1,865.12 | 1,865.41             | -0.29 | 389,450.51 | 1,165,635.16 | Brass Cap; P/P              | Found 2011, Fd 02, 87, 78; Common with Rg 1661.9 133+39.7     |
| 1661.3 | -     | 155+61             | 155+51.7 | 1,863.94 | 1,862.30 | 1,863.25             | -0.95 | 398.208.78 | 1,158,417.92 | Rebar; Carsonite            | Found 2011, Set in 1987 Trenton Lake                          |
|        | Right |                    |          |          |          |                      |       | ,          |              |                             |   |
| 1661.3 | Right | 193+18             | 193+09.5 | 1,867.58 | 1,865.94 | 1,866.37             | -0.43 | 401,115.07 | 1,156,035.85 | 3/4" Pipe; carsonite        | Found 2011, Fd 87; Trenton Lake                               |
| 1661.3 | Right | 253+52             | 253+44.2 | 1,863.28 | 1,861.63 | 1,861.98             | -0.35 | 405,781.92 | 1,152,209.78 | 1 1/4" Pipe; P/P            | Found 2011, Fd 78; Trenton Lake                               |
| 1661.3 | Left  | 264+93             |          |          |          | 1,858.68             |       |            |              | Pipe                        | Not found 2011, Fd 87, 78                                     |
| 1661.3 | Left  | 267+14.7           | 267+05.3 | 1,901.27 | 1,899.62 | 1,899.77             | -0.15 | 406,834.35 | 1,151,346.72 | Concrete Monument; P/P      | Found 2011, Fd 02, 87   |
| 1660.7 | Left  |                    | 200+00.0 | 1,862.29 | 1,860.65 |                      |       | 395,387.77 | 1,161,618.08 | Hub                         | Set in 2011 - Hub - 25' from HB                               |
| 1660.7 | Left  |                    |          |          |          |                      |       |            |              | Brass Cap                   | Not found 2011  |
| 1660.7 | Left  | 15+92<br>(17+87.2) |          |          |          | 1858.59<br>(1857.93) |       |            |              | 2" Pipe                     | Not found 2011, Fd 87, 78; Not Fd 2002                        |
| 1660.7 | Right | 40+63              |          |          |          | 1,859.48             |       |            |              | Pipe                        | Not found 2011, Fd 02, 87, 78                                 |
| 1660.7 | Right |                    | 208+80.4 | 1,860.61 | 1,858.96 |                      |       | 395,590.44 | 1,162,474.82 | Hub                         | Set in 2011 - Hub - 25' from HB                               |
| 1659.0 | Right | 19+99.1            | 19+88.6  | 1,949.16 | 1,947.49 | 1,947.89             | -0.40 | 387,728.20 | 1,167,014.66 | Concrete Monument, P&P      | Found 2011, Fd 10; Also common with 1661.3R                   |
| 1659.0 | Right | 64+44.6            | 64+44.6  | 1,864.00 | 1,862.35 | 1,862.62             | -0.27 | 392,095.39 | 1,166,129.40 | 3/4" Pipe, P&P              | Found 2011  |
| 1659.0 | Right | 91+29.9            | 91+29.5  | 1,858.70 | 1,857.05 | 1,857.08             | -0.03 | 394,726.94 | 1,165,596.69 | 3/4" Pipe, P&P              | Found 2011, Fd 78   |
| 1659.0 | Right | 149+50.8           |          |          |          | 1,856.53             |       |            |              | pipe                        | Not found 2011  |
| 1659.0 | Right | 158+68             |          |          |          | 1,859.22             |       |            |              | Brass Cap                   | Not Found 2011  |
| 1659.0 | Right |                    | 158+66.6 | 1,858.50 | 1,856.86 |                      |       | 401,329.92 | 1,164,259.03 | Aluminum Cap & Carsonite    | Set 2011  |
| 1659.0 | Left  | ~193+30            | 100-00.0 | 1,000.00 | 1,000.00 | 1,861.44             |       | 101,020.02 | 1,101,200.00 | pipe                        | Not Found 2011  |
| 1659.0 | Left  | 193+38             | 193+36.7 | 4 004 70 | 1,860.14 | 1,860.83             | -0.69 | 404 700 07 | 4 400 570 00 |                             | Found 2011, Fd 87, 78 Not FD 2010                             |
|        |       |                    | 193+36.7 | 1,861.78 | 1,000.14 |                      | -0.09 | 404,730.87 | 1,163,570.00 | 3/4" Pipe; carsonite        |   |
| 1659.0 | Left  | 197+06             |          |          |          | 1,859.98             |       |            |              | 3/4" Pipe                   | Not Found 2011, Ditch of Road. NOT FD 10                      |
| 1659.0 | Left  |                    | 197+95.5 | 1,860.78 | 1,859.14 |                      |       | 405,180.45 | 1,163,478.33 | 1 1/4" Pipe; carsonite      | Found 2011  |
| 1659.0 | Left  | 214+30.5           |          |          |          | 1,858.98             |       |            |              | Pipe                        | Not Found 2011  |
| 1659.0 | Left  | 245+31             |          |          |          | 1,859.02             |       |            |              |                             | Not Found 2011  |
| 1659.0 | Left  | 260+73.3           | 260+71.8 | 1,874.27 | 1,872.63 | 1,872.85             | -0.22 | 411,331.98 | 1,162,233.31 | Concrete Monument; P/P      | FD '11, Fd 87, NOT FD 10                                      |
| 1655.8 | Right | 19+66.24           | 19+66.2  | 1,895.41 | 1,893.76 | 1,893.94             | -0.18 | 397,788.49 | 1,178,822.40 | Monument                    | Found 2011, Fd 10   |
| 1655.8 | Right | 20+00              | 20+00.2  | 1,894.50 | 1,892.86 | 1,893.02             | -0.16 | 397,821.43 | 1,178,814.30 | Monument, P&P               | Found 2011, Fd 10   |
| 1655.8 | Right | 20+69              |          |          |          | 1,856.03             |       |            |              | 3/4" Pipe, P&P              | Found 2011, Fd 10   |
| 1655.8 | Left  | 45+24              |          |          |          | 1,852.96             |       |            |              | 1 1/2" Pipe; carsonite; P/P | Found 2011, Fd 87, 78   |
| 1655.8 | Left  | 71+28              |          |          |          | 1,861.23             |       |            |              | Pipe                        | Not found 2011  |
| 1655.8 | Left  | 105+70.8           | 105+69.4 | 1,857.49 | 1,855.86 | 1,856.82             | -0.96 | 406,140.01 | 1,176,756.95 | Pipe; carsonite             | Found 2011  |
| 1655.8 | Left  |                    | 201+65.2 | 1,876.94 | 1,875.30 |                      |       | 415,455.17 | 1,174,453.15 | Brass Cap; carsonite        | Set 2011  |
| 1655.8 | Left  | 201+64.6           |          |          |          | 1,874.57             |       |            |              | Pipe                        | Not found 2011, NOT FD 10                                     |
| 1651.3 | Left  | 100+00             |          |          |          | 2,011.15             |       |            |              | Monument                    | Not Found 2011  |
| 1651.3 | Left  | 100+00             |          |          |          | 2,008.86             |       |            |              |                             | Not Found 2011  |
|        |       |                    | 105.001  | 4 000 05 | 1.005.01 |                      | 0.00  | 447 500 55 | 4 470 407 11 | Pipe                        |   |
| 1651.3 | Left  | 105+06.4           | 105+06.4 | 1,886.95 | 1,885.31 | 1,885.53             | -0.22 | 417,560.55 | 1,178,135.41 | 1" Pipe; P/P                | Found 2011  |
| 1651.3 | Left  | 107+46.10          | 107+45.1 | 1,863.16 | 1,861.52 | 1,861.98             | -0.46 | 417,374.25 | 1,178,284.69 | 1" Pipe; P/P                | Found 2011, Fd 78   |
| 1651.3 | Right | 126+38             | 126+37.5 | 1,852.05 | 1,850.41 | 1,850.99             | -0.58 | 415,897.63 | 1,179,468.27 | Brass Cap; carsonite        | Found 2011  |
| 1651.3 | Right | 152+33.9           |          |          |          | 1,854.61             |       |            |              | 1" Pipe                     | Not Found 2011  |
| 1651.3 | Right | 289+15.1           | 289+09.3 | 1,920.13 | 1,918.46 | 1,918.60             | -0.14 | 403,203.11 | 1,189,647.62 | 1" Pipe; P/P                | Found 2011, Fd 78; Fd 02                                      |
| 1651.3 | Right | 289+30.5           | 289+24.9 | 1,921.08 | 1,919.42 | 1,919.59             | -0.17 | 403,190.95 | 1,189,657.31 | Monument; P/P               | Found 2011, Fd 02   |
|        |       |                    |          |          |          |                      | _     |            |              |                             | ·   |

| 1                          |                         |                        |                                  |                                  |                      |                      |       |                        |              |   |   |
|----------------------------|-------------------------|------------------------|----------------------------------|----------------------------------|----------------------|----------------------|-------|------------------------|--------------|---|---|
| 1650.3                     | Right                   | 18+11.1                | 18+19.0                          | 1,933.55                         | 1,931.88             | 1,931.99             | -0.11 | 405,865.32             | 1,192,168.01 | Monument; carsonite                                   | Found 2011, Fd 02; Same as R/B 1648.1                           |
| 1650.3                     | Right                   | 186+38                 | 186+38.7                         | 1,854.03                         | 1,852.39             | 1,853.15             | -0.77 | 419,914.52             | 1,182,920.23 | 1/2" Pipe; carsonite                                  | Found 2011, Fd 02, 87, 78                                       |
| 1650.3                     | Left                    | 201+31                 | 201+31.4                         | 1,858.23                         | 1,856.59             | 1,857.13             | -0.54 | 421,161.57             | 1,182,099.82 | 3/4" Pipe; P/P  | Found 2011, Fd 10   |
| 1650.3                     | Left                    | 202+60.9               | 202+61.0                         | 1,913.91                         | 1,912.27             | 1,912.31             | -0.04 | 421,269.99             | 1,182,028.79 | Concrete Monument; P/P                                | Found 2011, Fd 10   |
| 1650.3                     | Left                    | 209+98                 | 209+98.0                         | 1,960.70                         | 1,959.06             | 1,959.04             | 0.02  | 421,885.83             | 1,181,624.01 | Monument; P/P   | Found 2011, Not Fd 87, falls in plowed field                    |
| 1648.1                     | Left                    | 100+00                 | 100+00.0                         | 1,896.14                         | 1,894.50             | 1,894.86             | -0.36 | 430,552.41             | 1,191,517.38 | MRC Monument; P&P                                     | Found 2011, FD 02, 89   |
| 1648.1                     | Left                    | 109+83.3               | 109+81.1                         | 1,864.11                         | 1,862.47             | 1,862.67             | -0.20 | 429,571.68             | 1,191,543.23 | Monument: carsonite                                   | Found 2011, Fd 02   |
|                            |                         |                        | 103-01.1                         | 1,004.11                         | 1,002.41             |                      | -0.20 | 423,071.00             | 1,101,040.20 | ,               | ·   |
| 1648.1                     | Right                   | 178+24                 |                                  |                                  |                      | 1,848.17             |       |                        |              | Brass Cap   | <b>Not Found 2011</b> , Set in 1989                             |
| 1648.1                     | Right                   | 203+76                 |                                  |                                  |                      | 1,850.23             |       |                        |              | Brass Cap   | <b>Not Found 2011</b> , Set in 1989                             |
| 1648.1                     | Right                   | 339+78                 |                                  |                                  |                      | 1,863.70             |       |                        |              | 5/8" Rebar  | Not Found 2011, Set in 1989                                     |
| 1648.1                     | Right                   |                        | 346+03.0                         | 1,905.69                         | 1,904.03             |                      |       | 405,957.79             | 1,192,159.00 | 5/8" Rebar  | Found 2011  |
| 1648.1                     | Right                   | 346+97.9               | 346+95.7                         | 1,933.55                         | 1,931.88             | 1,931.99             | -0.11 | 405,865.32             | 1,192,168.01 | Monument; carsonite                                   | Found 2011, Fd 02, 89   |
| 1646.0                     | Right                   | 16+11                  | 16+11.0                          | 1,924.03                         | 1,922.38             | 1,922.44             | -0.06 | 414,102.65             | 1,202,638.19 | Concrete Monument; P/P                                | Found 2011, Fd 02;  |
| 1646.0                     | Right                   | 16+16.6                | 16+16.6                          | 1,924.13                         | 1,922.49             | 1,922.50             | -0.02 | 414,108.08             | 1,202,636.75 | 1" Pipe; carsonite                                    | Found 2011, Fd 02, 87   |
| 1646.0                     | Right                   | 17+67.4                | 17+67.4                          | 1,860.52                         | 1,858.88             | 1,859.04             | -0.16 | 414,253.49             | 1,202,596.85 | Brass Cap; P/P  | Found 2011, Fd 02, 87   |
| 1646.0                     | Right                   | 19+44                  | 19+44.5                          | 1,855.59                         | 1,853.95             | 1,854.08             | -0.13 | 414,424.25             | 1,202,549.80 | Brass Cap; carsonite                                  | Found 2011, Set in 2002   |
| 1646.0                     | Right                   | 89+02                  |                                  |                                  |                      | 1,849.70             |       |                        |              | Brass Cap   | Not Found 2011, Set in 1987                                     |
| 1646.0                     | Left                    | 106+93                 |                                  |                                  |                      | 1,848.59             |       |                        |              | Brass Cap; carsonite                                  | Found 2011, Set in 1987   |
| 1646.0                     | Left                    | 161+12                 | 161+17.1                         | 1,862.84                         | 1,861.20             | 1,861.88             | -0.68 | 428,093.98             | 1,198,807.91 | Monument; P/P ; carsonite                             | Found 2011, Fd '10  |
| 1646.0                     | Left                    | 169+29                 |                                  | .,502.07                         | .,501.20             | 1,845.95             | 3.00  | ,,,,,,,,,,,            | .,,          | Brass Cap   | Did not search for 2011, Reset in 1987                          |
|                            |                         |                        |                                  |                                  |                      |                      |       |                        |              | ·   | Did not search for 2011, Reset in 1987  Did not search for 2011 |
| 1646.0                     | Left                    | 228+15.4               |                                  |                                  |                      | 1,895.69             |       |                        |              | Monument  |   |
| 1644.5                     | Left                    | 99+15.6                | 99+15.6                          | 1,862.30                         | 1,860.69             | 1,860.91             | -0.23 | 427,491.68             | 1,206,131.71 | Monument; carsonite                                   | Found 2011, Fd 10;  |
| 1644.5                     | Right                   | 197+56.7               |                                  |                                  |                      | 1,853.31             |       |                        |              | Pipe  | Found 2011 (destroyed did not reset), Fd 87, 78                 |
| 1644.5                     | Right                   | 198+85                 | 198+79.8                         | 1,937.42                         | 1,935.79             | 1,936.35             | -0.56 | 417,934.30             | 1,208,949.72 | Pipe; P/P   | Found 2011, Fd 87   |
| 1644.5                     | Right                   | 201+51                 | 201+46.4                         | 2,040.91                         | 2,039.28             | 2,036.55             | 2.73  | 417,678.42             | 1,209,024.62 | Brass Cap; P/P  | Found 2011  |
| 1639.7                     | Left                    | 100+00                 | 100+00.0                         | 1,915.21                         | 1,913.60             | 1,913.71             | -0.11 | 429,632.80             | 1,221,222.25 | Monument; P/P   | Found 2011, Fd 03, 87, 78; Same as MUD 0.4 L                    |
| 1639.7                     | Left                    | 131+93                 |                                  |                                  |                      | 1,854.03             |       |                        |              | Pipe  | Not Found 2011, Fd 78;  |
| 1639.7                     | Right                   | 262+67.6               | 262+59.8                         | 1,900.80                         | 1,899.18             | 1,899.52             | -0.34 | 417,188.75             | 1,210,756.73 | 3/4" Pipe; P/P  | Found 2011, Fd 03, 87, 78;                                      |
| 1639.7                     | Right                   | 267+62.7               | 267+54.0                         | 1,998.28                         | 1,996.66             | 1,997.60             | -0.94 | 416,810.35             | 1,210,438.84 | Brass Cap; P/P  | Found 2011, Fd 03; Same as 1639.5 R                             |
| 1639.5                     | Right                   | 24+88.87               | 24+88.9                          | 1,998.28                         | 1,996.66             | 1,997.60             | -0.94 | 416,810.35             | 1,210,438.84 | Brass Cap; P/P, 1" Pipe                               | Found 2011, Fd 03, 87, 78; same as 1639.7 R                     |
| 1639.5                     | Right                   | 30+48                  | 30+49.9                          | 1,898.66                         | 1,897.04             | 1,896.80             | 0.24  | 416,958.07             | 1,210,980.11 | Brass Cap; P/P  | Found 2011, Fd 78; Fd 87  |
| 1639.5                     | Right                   | 32+12.9                | 00.10.0                          | 1,000.00                         | 1,007.01             | 1,864.65             | 0.21  | 110,000.01             | 1,210,000.11 | Monument; P/P   | Not Found 2011 (point falls in water), Fd 03                    |
|                            |                         |                        |                                  |                                  |                      |                      |       |                        |              |   |   |
| 1639.5                     | Left                    | 52+44                  |                                  |                                  |                      | 1,841.28             |       |                        |              | Brass Cap   | Not Found 2011, Set in 1987;                                    |
| 1639.5                     | Left                    | 155+20.8               | 155+14.5                         | 1,881.52                         | 1,879.90             | 1,880.28             | -0.38 | 420,244.31             | 1,223,003.68 | Concrete Monument; P/P                                | Found 2011, Fd 03, 87, 78;                                      |
| 1639.5                     | Left                    | 163+16.54              | 163+09.8                         | 1,914.95                         | 1,913.33             | 1,913.50             | -0.17 | 420,454.06             | 1,223,770.79 | Monument; carsonite                                   | Found 2011, Fd 03   |
| 1636.2                     | Left                    | 100+00                 | 100+00.0                         | 1,925.88                         | 1,924.25             | 1,924.40             | 0.15  | 409096.32              | 1224259.95   | COE Brass Cap/Post & Plate                            | FD '12, FD '03, FD '87, FD '78                                  |
| 1636.2                     | Right                   | 121+15                 |                                  |                                  |                      | 1,845.29             |       |                        |              | Brass Cap   | NF '12, SET '87   |
| 1636.2                     | Right                   | 215+29.5               | 215+26.7                         | 1,910.44                         | 1,908.81             | 1,908.36             | -0.45 | 408580.42              | 1212744.79   | COE Brass Cap/Carsonite                               | FD '12  |
| 1632.8                     | Right                   | 16+32.8                | 16+32.8                          | 1,921.23                         | 1,919.58             | 1,919.64             | 0.06  | 395878.91              | 1213444.76   | COE Brass Cap/Post & Plate                            | FD '12, FD '03, FD '87  |
| 1632.8                     | Right                   | 16+84.4                | 16+84.3                          | 1,912.82                         | 1,911.17             | 1,911.22             | 0.05  | 395892.07              | 1213494.55   | Concrete Monument/Post & Plate                        | FD '12, FD '03, FD '87, FD '78                                  |
| 1632.8                     | Island                  | 48+87                  |                                  |                                  |                      | 1,844.20             |       |                        |              | 3/4" Pipe   | NF '12, FD '87  |
| 1632.8                     | Left                    | 133+31.8               | 133+23.2                         | 1,858.57                         | 1,856.95             | 1,857.18             | 0.23  | 398867.09              | 1224746.81   | 1" Pipe/Post & Plate                                  | FD '12, FD '87, FD '78  |
| 1632.8                     | Left                    | 136+89.2               | 136+80.8                         | 1,952.68                         | 1,951.06             | 1,951.00             | -0.06 | 398958.62              | 1225092.48   | Concrete Monument/Post & Plate                        | FD '12  |
| 1629.4                     | Left                    | 100+00                 | 100+00.0                         | 1,962.85                         | 1,961.22             | 1,961.23             | 0.01  | 391790.40              | 1230210.09   | COE Brass Cap/Carsonite                               | FD '12, FD '03  |
| 1629.4                     | Left                    | 114+22                 | 114+22.0                         | 1,873.43                         | 1,871.80             | 1,871.61             | -0.19 | 391049.03              | 1228996.67   | COE Brass Cap/Carsonite                               | FD '12, SET '03   |
| 1629.4                     | Left                    | 114+68.39              | 114+68.0                         | 1,871.56                         | 1,869.93             | 1,869.92             | -0.19 | 391025.89              | 1228956.85   | COE Brass Cap/Carsonite                               | FD '12, FD '03, FD '87, FD '78                                  |
|                            |                         |                        |                                  |                                  |                      |                      |       |                        |              |   |   |
| 1629.4                     | Right                   | 223+70.47              | 223+67.2                         | 1,858.90                         | 1,857.27             | 1,857.52             | 0.25  | 385349.96              | 1219652.19   | 3/4" Pipe/Post & Plate                                | FD '12, FD '87, FD '78  |
| 1629.4                     | Right                   | 226+65.95              | 226+62.7                         | 1,913.73                         | 1,912.10             | 1,912.14             | 0.04  | 385196.09              | 1219399.96   | 4" Pipe/Carsonite                                     | FD '12  |
| 1629.4                     | Right                   | 229+49.27              | 229+45.5                         | 1,904.64                         | 1,903.00             | 1,903.03             | 0.03  | 385048.87              | 1219158.48   | 6" COE Brass Cap/Carsonite                            | FD '12  |
| 1627.5                     | Left                    | 100+00                 | 100+00.0                         | 2,000.85                         | 1,999.22             | 1,999.33             | 0.11  | 390461.17              | 1236839.71   | COE Brass Cap/Carsonite                               | FD '12, FD '03 - Common with 1626.0                             |
| 1627.5                     | Left                    | 141+95.2               | 141+93.9                         | 1,868.62                         | 1,867.00             | 1,866.90             | -0.10 | 386836.40              | 1234730.22   | 1 1/4" Pipe/Post & Plate                              | FD '12, FD '03, FD '87, FD '78                                  |
| 1627.5                     | Right                   | 269+00                 |                                  |                                  |                      | 1,857.17             |       |                        |              | 3/4" Pipe   | NF '12, FD '87, FD '78  |
| 1627.5                     | Right                   |                        | 269+31.1                         | 1,863.77                         | 1,862.14             |                      |       | 375827.95              | 1228323.24   | COE Aluminum Cap/Carsonite                            | SET '12   |
| 1627.5                     | Right                   | 275+16.24              | 274+81.0                         | 1,983.93                         | 1,982.29             | 1,982.37             | 80.0  | 375352.73              | 1228046.55   | COE Brass Cap/Carsonite                               | FD '12  |
| 1627.5                     | Right                   | 278+89.14              | 278+53.0                         | 1,985.15                         | 1,983.51             | 1,983.65             | 0.14  | 375031.13              | 1227859.53   | COE Brass Cap/Post & Plate                            | FD '12  |
| 1626.0                     | Left                    | 100+00                 | 100+00.0                         | 2,000.85                         | 1,999.22             | 1,999.33             | 0.11  | 390461.17              | 1236839.71   | COE Brass Cap/Carsonite                               | FD '12, FD '03 - Common with 1627.5                             |
| 1626.0                     | Left                    | 150+60.25              | 150+51.5                         | 1,853.58                         | 1,851.96             | 1,851.91             | -0.05 | 385537.43              | 1237968.45   | 1 1/4" Pipe/Post & Plate                              | FD '12, FD '03, FD '87, FD '78                                  |
| 1626.0                     | Right                   | 288+84                 |                                  | ,                                | ,                    | 1,858.05             |       |                        | . ===::=     | 3/4" Pipe   | FD '12, FD '87, FD '78  |
| 1020.0                     | -                       | ∠00+04                 | 000 40 7                         | 4 000 00                         | 1,960.34             | 1,000,10             |       | 371902.40              | 1241096.53   | COE Aluminum Cap/Carsonite                            | SET '12   |
| 4606.0                     | Diak                    |                        |                                  |                                  |                      |                      |       |                        |              |   |   |
| 1626.0                     | Right                   | 000 =0 00              | 290+40.7                         | 1,962.00                         |                      | 4.007.70             | 0.00  |                        |              |   |   |
| 1626.0<br>1626.0<br>1626.0 | Right<br>Right<br>Right | 290+58.26<br>296+49.21 | 290+40.7<br>290+51.6<br>296+42.1 | 1,962.00<br>1,963.34<br>2,037.10 | 1,961.68<br>2,035.44 | 1,961.76<br>2,035.47 | 0.08  | 371891.76<br>371316.21 | 1241099.01   | COE Brass Cap/Post & Plate COE Brass Cap/Post & Plate | FD '12<br>FD '12  |

| 1624.3           | l aft         | 100+00           | 100+00.0 | 1.057.06             | 1.056.33             | 1.056.06             | 0.07          | 391340.42 | 1241483.03 | COE Breen Con/Cornenite                      | FD '12   |
|------------------|---------------|------------------|----------|----------------------|----------------------|----------------------|---------------|-----------|------------|--|--|
| 1624.3           | Left<br>Left  | 111+83.23        | 111+83.1 | 1,957.96<br>1,908.05 | 1,956.33<br>1,906.42 | 1,956.26<br>1,906.56 | -0.07<br>0.14 | 391340.42 | 1241483.03 | COE Brass Cap/Carsonite  3/4" Pipe/Carsonite | FD 12  |
| 1624.3           | Left          | 111+92.6         | 111+91.3 | 1,907.69             | 1,906.06             | 1,906.41             | 0.14          | 390453.57 | 1242271.71 | 1" Pipe/Carsonite  1" Pipe/Post & Plate      | FD '12, FD '87, FD '78                                   |
| 1624.3           |               | 250+12           | 111+91.3 | 1,907.09             | 1,900.00             |                      | 0.35          | 390447.30 | 1242211.11 | •  | NF '12, SET '78  |
| 1624.3           | Right         | 255+37.35        | 255+31.4 | 2,008.15             | 2,006.52             | 1,857.50<br>2,006.56 | 0.04          | 379697.45 | 1251762.41 | Pipe  COE Brass Cap/Post & Plate             | FD '12, FD '78   |
| 1624.3           | Right         | 261+05.56        | 260+98.0 | 2,000.13             | 2,035.56             | 2,035.76             | 0.20          | 379272.77 | 1252137.43 | COE Brass Cap/Post & Plate                   | FD 12  |
| 1622.1           | Right         | 100+00           | 100+00.0 | 1,920.75             | 1,919.13             | 1,919.19             | 0.20          | 394601.58 | 1252137.43 | •  | FD '12, FD '87   |
|                  |               |                  | 100+00.0 | 1,920.75             | 1,919.13             |                      | 0.00          | 394001.30 | 1255550.40 | COE Brass Cap/Carsonite                      | ·  |
| 1622.1<br>1622.1 | Left<br>Right | 103+00<br>208+55 | 208+44.7 | 1,907.57             | 1,905.94             | 1,853.98             | 0.05          | 384352.46 | 1256900.82 | Pipe  COE Brass Cap/Carsonite                | NF '12, FD '87, FD '78<br>FD '12, FD '03, FD '87, FD '78 |
| 1622.1           | Right         | 216+44.95        | 216+38.9 | 1,916.05             | 1,914.41             | 1,914.52             | 0.05          | 383601.88 | 1257160.37 | COE Brass Cap/Carsonite                      | FD '12, PD '03, PD '07, PD '70  FD '12, NF '03           |
| 1619.8           | Left          | 94+39.78         | 94+40.9  | 1,917.18             | 1,915.57             | 1,915.88             | 0.31          | 399080.74 | 1262355.43 | COE Brass Cap/Post & Plate                   | FD '12, FD '87   |
| 1619.8           | Left          | 100+00           | 100+00.0 | 1,885.77             | 1,884.17             | 1,884.24             | 0.07          | 398532.54 | 1262465.52 | COE Brass Cap/Post & Plate                   | FD '12, FD '87, FD '78                                   |
| 1619.8           | Right         | 225+43.35        | 225+30.4 | 1,965.53             | 1,963.90             | 1,964.17             | 0.27          | 386247.52 | 1264933.27 | 1" Pipe/Carsonite                            | FD '12, FD '03, FD '87, FD '78                           |
| 1619.8           | Right         | 229+14.20        | 229+00.6 | 1,980.79             | 1,979.16             | 1,979.43             | 0.27          | 385884.58 | 1265006.14 | COE Brass Cap/Carsonite                      | FD '12, FD '03, FD '87                                   |
| 1616.5           | Left          | 100+00           | 100+00.0 | 1,978.48             | 1,976.88             | 1,977.05             | 0.17          | 399236.59 | 1279606.51 | COE Brass Cap/Carsonite                      | FD '12, FD '03   |
| 1616.5           | Left          | 106+20           | 106+18.3 | 1,905.06             | 1,903.47             | 1,903.66             | 0.19          | 398618.34 | 1279615.46 | 3/4" Pipe/Post & Plate                       | FD '12, FD '03, FD '87, FD '78                           |
| 1616.5           | Right         | 230+67.62        | 230+61.1 | 1,921.09             | 1,919.46             | 1,919.62             | 0.16          | 386176.90 | 1279798.95 | 4" COE Brass Cap/Post & Plate                | FD '12, FD '88, FD '87, FD '78                           |
| 1616.5           | Right         | 233+74.51        | 233+67.4 | 1,926.38             | 1,924.75             | 1,924.92             | 0.17          | 385870.67 | 1279803.53 | 4" Pipe/Post & Plate                         | FD 12  |
| 1613.6           | Left          | 95+88.88         | 95+88.9  | 1,908.53             | 1,906.93             | 1,906.98             | 0.05          | 399468.08 | 1289105.82 | COE Brass Cap/Post & Plate                   | FD '12, FD '87, FD '78                                   |
| 1613.6           | Right         | 192+94.54        |          | ,                    | ,                    | 1,868.06             |               |           |            | 3/4" Pipe                                    | NF '12, FD '87, FD '78                                   |
| 1613.6           | Right         | 01.07            | 193+53.3 | 1,871.72             | 1,870.09             | .,                   |               | 390883.98 | 1293759.57 | COE Aluminum Cap/Carsonite                   | SET 12   |
| 1613.6           | Right         | 205+41.19        | 205+37.8 | 1,931.62             | 1,929.99             | 1,930.20             | 0.21          | 389842.68 | 1294324.19 | COE Brass Cap/Carsonite                      | FD '12   |
| 1610.8           | Left          | 100+00           | 100+00.0 | 1,896.33             | 1,894.74             | 1,895.23             | 0.49          | 404389.43 | 1292078.41 | 4" Pipe                                      | FD '12, NF '02, FD '78                                   |
| 1610.8           | Left          |                  | 100+02.3 | 1,894.12             | 1,892.53             | ,                    |               | 404388.43 | 1292080.51 | COE Aluminum Cap/Carsonite                   | SET '12  |
| 1610.8           | Left          |                  | 116+98.4 | 1,862.69             | 1,861.10             |                      |               | 403887.55 | 1293700.93 | COE Aluminum Cap/Carsonite                   | SET '12  |
| 1610.8           | Left          | 117+90           |          | ,                    | ,                    | 1,859.26             |               |           |            | Brass Cap                                    | NF '12, NF '02, SET '87                                  |
| 1610.8           | Right         | 211+30.71        | 211+31.0 | 1,925.58             | 1,923.96             | 1,924.10             | 0.14          | 401100.02 | 1302712.25 | 4" COE Brass Cap/Carsonite                   | FD '12, FD '87, FD '78                                   |
| 1610.8           | Right         | 221+78           | 221+78.0 | 1,915.09             | 1,913.47             | 1,913.58             | 0.11          | 400790.60 | 1303712.48 | 4" COE Brass Cap/Carsonite                   | FD '12   |
| 1607.5           | Left          | 120+45.87        | 120+45.9 | 1,869.68             | 1,868.11             | 1,868.16             | 0.05          | 413133.99 | 1296235.90 | 6" COE Brass Cap/Post & Plate                | FD '12, NF '02, FD '87, FD '78                           |
| 1607.5           |               |                  | 123+55.4 | 1,870.84             | 1,869.27             | ,                    |               | 413016.97 | 1296522.49 | COE Aluminum Cap/Carsonite                   | SET '12  |
| 1607.5           | Left          | 124+40           |          |                      |                      | 1,868.42             |               |           |            | Brass Cap                                    | NF '12, NF '02, SET '87                                  |
| 1607.5           | Right         | 218+14           | 217+94.6 | 1,870.82             | 1,869.21             | 1,869.33             | 0.12          | 409450.55 | 1305261.97 | 3/4" Pipe/Post & Plate                       | FD '12, FD '78   |
| 1607.5           | Right         | 225+92.94        | 225+85.8 | 1,976.74             | 1,975.13             | 1,975.35             | 0.22          | 409152.02 | 1305994.72 | 3/4" Pipe/Carsonite                          | FD '12   |
| 1607.5           | Right         | 231+50.37        | 231+42.6 | 2,061.06             | 2,059.45             | 2,059.60             | 0.15          | 408941.52 | 1306510.15 | COE Brass Cap/Post & Plate                   | FD '12, FD '87   |
| 1605.6           | Left          | 100+00           | 100+00.0 | 1,950.72             | 1,949.13             | 1,949.35             | 0.22          | 422673.45 | 1300319.92 | COE Brass Cap/Carsonite                      | FD '12, FD '02   |
| 1605.6           | Left          | 117+00           | 116+99.0 | 1,857.88             | 1,856.29             | 1,856.50             | 0.21          | 421673.10 | 1301693.15 | 3/4" Pipe/Carsonite                          | F <b>D '12</b> , FD '02, FD '87                          |
| 1605.6           | Right         | 206+20.03        | 206+16.6 | 1,907.08             | 1,905.47             | 1,905.51             | 0.04          | 416422.12 | 1308900.93 | 4" COE Brass Cap/Post & Plate                | F <b>D '12</b> , FD '03, FD '87                          |
| 1605.6           | Right         | 212+13.84        | 212+09.8 | 1,932.97             | 1,931.36             | 1,931.51             | 0.15          | 416072.79 | 1309380.33 | COE Brass Cap/Post & Plate                   | FD '12, FD '03,  |
| 1602.8           | Left          | 100+00           | 100+00.0 | 1,900.71             | 1,899.12             | 1,899.39             | 0.27          | 429842.15 | 1313617.86 | COE Brass Cap/Post & Plate                   | FD '12, FD '03, FD '87                                   |
| 1602.8           | Right         | 226+17.74        | 226+12.8 | 1,886.64             | 1,885.04             | 1,885.32             | 0.28          | 417468.88 | 1316064.50 | COE Brass Cap/Post & Plate                   | FD '12, FD '03, FD '87                                   |
| 1602.8           | Right         | 231+85.89        | 231+80.7 | 1,895.24             | 1,893.64             | 1,876.58             | -17.06        | 416911.79 | 1316174.61 | COE Brass Cap/Carsonite                      | FD '12, FD '03   |
| 1600.7           | Left          | 87+69.14         |          |                      |                      | 1,894.95             |               |           |            | 6" Monument                                  | NF '12   |
| 1600.7           | Left          | 98+43.79         | 98+43.8  | 1,872.75             | 1,871.16             | 1,871.39             | 0.23          | 432740.35 | 1323988.84 | 2" Pipe/Post & Plate                         | F <b>D '12</b> , FD '02, FD '87                          |
| 1600.7           |               |                  | 98+44.1  | 1,872.70             | 1,871.11             |                      |               | 432740.11 | 1323988.62 | COE Aluminum Cap/Carsonite                   | SET '12  |
| 1600.7           | Right         | 234+78.37        | 234+77.4 | 1,877.88             | 1,876.28             | 1,876.49             | 0.21          | 419229.63 | 1325815.11 | 1" Pipe/Post & Plate                         | F <b>D '12</b> , FD '02, FD '87                          |
| 1600.7           | Right         | 239+19.52        | 239+16.4 | 1,886.77             | 1,885.17             | 1,885.35             | 0.18          | 418794.09 | 1325870.61 | Brass Cap/Carsonite                          | FD '12   |
| 1598.8           | Left          | 100+00           | 100+00.0 | 1,883.92             | 1,882.33             | 1,882.70             | 0.37          | 431711.80 | 1333089.35 | COE Brass Cap/Carsonite                      | F <b>D '12</b> , FD '02, FD '78                          |
| 1598.8           | Left          |                  | 103+00.5 | 1,881.92             | 1,880.33             |                      |               | 431411.29 | 1333088.86 | COE Brass Cap/Post & Plate                   | FD '12   |
| 1598.8           | Right         | 230+10.89        | 230+06.3 | 1,903.65             | 1,902.05             | 1,902.16             | 0.11          | 418705.53 | 1333070.72 | 4" COE Brass Cap/Post & Plate                | FD '12, FD' 02, FD '78                                   |
| 1598.8           | Right         | 233+23.89        | 233+19.3 | 1,898.18             | 1,896.58             | 1,896.74             | 0.16          | 418392.50 | 1333070.35 | 6" COE Brass Cap/Carsonite                   | FD '12   |
| 1595.2           | Left          | 94+71            | 94+71.0  | 1,989.72             | 1,988.14             | 1,988.23             | 0.09          | 430429.07 | 1343148.88 | 6" COE Brass Cap/Carsonite                   | FD '12, FD '02   |
| 1595.2           | Left          | 98+49.44         | 98+49.1  | 1,874.50             | 1,872.92             | 1,872.53             | -0.39         | 430051.19 | 1343137.12 | 1 1/2" Pipe/Carsonite                        | FD '12, FD' 02, FD '78                                   |
| 1595.2           | Right         | 178+19           | 178+12.9 | 1,864.63             | 1,863.04             | 1,862.90             | -0.14         | 422091.07 | 1342892.61 | 3/4" Pipe/Carsonite                          | F <b>D '12</b> , NF '02, FD '78                          |
| 1595.2           | Right         | 193+01.96        | 192+95.6 | 2,032.07             | 2,030.48             | 2,030.67             | 0.19          | 420609.12 | 1342846.77 | 6" COE Brass Cap/Carsonite                   | FD '12, FD '02   |
| 1592.8           | Left          | 100+00           | 100+00.0 | 1,902.90             | 1,901.33             | 1,901.44             | 0.11          | 434514.76 | 1354393.54 | COE Brass Cap/Carsonite                      | FD '12   |
| 1592.8           | Left          |                  | 104+56.2 | 1,889.12             | 1,887.55             |                      |               | 434058.62 | 1354399.40 | COE Aluminum Cap/Carsonite                   | SET '12  |
| 1592.8           | Left          | 106+50           |          |                      |                      | 1,863.14             |               |           |            | 4" Monument                                  | NF '12, Washed out in 88                                 |
| 1592.8           | Left          | 106+65           |          |                      |                      | 1,878.50             |               |           |            | 3/8" Rebar                                   | NF '12, Washed out in 88                                 |
| 1592.8           | Right         | 264+06.72        | 263+99.4 | 1,899.03             | 1,897.44             | 1,897.98             | 0.54          | 418116.73 | 1354602.42 | 4" COE Brass Cap/Carsonite                   | FD '12, FD' 03, FD '78                                   |
| 1592.8           | Right         | 270+64.95        | 270+56.1 | 2,026.76             | 2,025.17             | 2,025.29             | 0.12          | 417460.02 | 1354610.72 | 6" COE Brass Cap/Post & Plate                | FD '12 FD '03  |
| 1590.5           | Left          | 100+00           |          |                      |                      | 1,915.00             |               |           |            | Monument                                     | NF '12 - Covered By Gravel Pile, FD '03                  |
|                  |               |                  |          |                      |                      |                      |               |           |            |  |  |

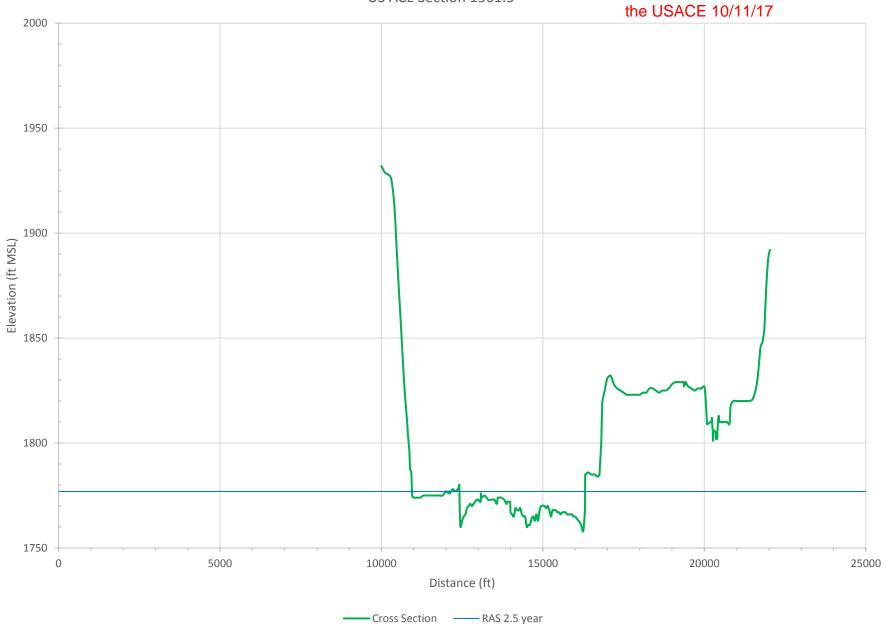
| 1590.5           | Left         |                     | 126+65.4 | 1,869.20             | 1,867.63             |                      |               | 433162.27              | 1366462.24               | COE Brass Cap/Carsonite           | FD '12 FD '03                                |
|------------------|--------------|---------------------|----------|----------------------|----------------------|----------------------|---------------|------------------------|--------------------------|-----------------------------------|--|
| 1590.5           | Left         | 133+98.28           | 133+99.9 | 1,855.88             | 1,854.31             | 1,854.95             | 0.64          | 432432.00              | 1366383.67               | 1 1/4" Pipe/Post & Plate          | FD '12, FD' 03, FD '78                       |
| 1590.5           | Right        | 294+28              | 294+28.0 | 1,869.70             | 1,868.11             | 1,868.27             | 0.16          | 416496.24              | 1364665.46               | 1" Pipe/Post & Plate              | FD '12, FD' 03, FD '78                       |
| 1590.5           | Right        | 296+98.39           | 296+96.4 | 1,918.60             | 1,917.00             | 1,917.94             | 0.94          | 416229.46              | 1364636.29               | 4" Pipe/Post & Plate              | FD '12 FD '03                                |
| 1590.5           | Right        | 309+92.16           | 309+89.6 | 1,948.14             | 1,946.54             | 1,946.81             | 0.27          | 414943.68              | 1364497.74               | 6" COE Brass Cap/Post & Plate     | FD '12 FD '03                                |
| 1587.4           | Left         | 97+10.51            | 97+11.8  | 1,990.89             | 1,989.33             | 1,989.42             | 0.10          | 430673.67              | 1379591.32               | COE Brass Cap/Carsonite           | FD '12 FD '03                                |
| 1587.4           | Left         | 100+00              | 100+00.0 | 1,962.90             | 1,961.34             | 1,961.50             | 0.16          | 430387.16              | 1379559.79               | COE Brass Cap/Post & Plate        | FD '12 FD '03                                |
| 1587.4           | Left         | 103+53.4            | 103+53.0 | 1,905.39             | 1,903.83             | 1,903.80             | -0.03         | 430036.29              | 1379520.73               | 1 1/4" Pipe/Casrsonite            | FD '12, FD' 03, FD '78                       |
| 1587.4           | Right        | 241+00              | 240+92.8 | 1,859.19             | 1,857.59             | 1,857.74             | 0.15          | 416380.15              | 1378007.41               | 4" COE Brass Cap/Carsonite        | FD '12, FD' 03, FD '78                       |
| 1587.4           | Right        | 255+98.96           |          |                      |                      | 1,938.03             |               |                        |                          | Monument carsonite                | NF '12 - Oil Rig Has Been Setup Here, FD '03 |
| 1584.8           | Left         | 85+26.6             |          |                      |                      | 1,916.41             |               |                        |                          | Monument                          | NF '12                                       |
| 1584.8           | Left         | 100+00              | 100+05.5 | 1,895.35             | 1,893.81             | 1,896.58             | 2.77          | 428966.29              | 1390157.03               | COE Brass Cap/Carsonite           | FD '12, FD '78                               |
| 1584.8           | Right        | 232+86              | 232+86.0 | 1,879.00             | 1,877.41             | 1,877.72             | 0.31          | 415706.74              | 1390903.72               | 3/4" Pipe/Post & Plate/Carsonite  | FD '12, FD' 03, FD '78                       |
| 1584.8           | Right        | 244+23.05           | 244+23.1 | 2,121.01             | 2,119.42             | 2,119.83             | 0.41          | 414571.52              | 1390967.72               | COE Brass Cap/Post                | FD '12 FD '03                                |
| 1581.8           | Left         |                     | 93+93.5  | 1,928.32             | 1,926.78             |                      |               | 427184.29              | 1405852.76               | COE Brass Cap/Carsonite           | FD '12, FD '03                               |
| 1581.8           | Left         | 100+00              | 100+00.0 | 1,941.27             | 1,939.73             | 1,939.65             | -0.08         | 426619.74              | 1405631.24               | 4" COE Brass Cap/Post & Plate     | FD '12, FD' 03, FD '78                       |
| 1581.8           | Right        | 211+45.15           | 211+41.4 | 1,908.22             | 1,906.66             | 1,906.68             | 0.02          | 416248.30              | 1401561.31               | 4" COE Brass Cap/Post & Plate     | FD '12, FD' 03, FD '78                       |
| 1581.8           | Right        | 213+17.70           | 213+13.8 | 1,907.68             | 1,906.12             | 1,906.16             | 0.04          | 416087.86              | 1401498.21               | 6" COE Brass Cap/Post             | FD '12 FD '03                                |
| 1578.2           | Left         | 100+00              | 100+00.0 | 2,008.21             | 2,006.66             | 2,006.70             | 0.05          | 420948.00              | 1419323.57               | COE Brass Cap/Post & Plate        | FD '12 FD '03                                |
| 1578.2           | Left         | A-390               |          |                      |                      | 1,882.13             |               |                        |                          | C&G BM off line                   | NF '12                                       |
| 1578.2           | Left         | 107+43              | 107+42.1 | 1,864.08             | 1,862.53             | 1,863.17             | 0.64          | 420351.86              | 1418881.56               | COE Brass Cap/Carsonite           | FD '12, Set '03                              |
| 1578.2           | Left         | 109+00              | 108+97.5 | 1,857.19             | 1,855.64             | 1,857.07             | 1.43          | 420228.20              | 1418787.46               | 4" COE Brass Cap/Carsonite        | FD '12- BENT, FD' 03, FD '78                 |
| 1578.2           | Right        | 251+12.61           | 250+93.2 | 1,968.94             | 1,967.39             | 1,967.48             | 0.09          | 408827.89              | 1410328.72               | 4" COE Brass Cap/Carsonite        | FD '12, FD' 03, FD '78                       |
| 1578.2           | Right        | 260+55.4            | 260+33.1 | 1,987.75             | 1,986.19             | 1,986.29             | 0.10          | 408073.07              | 1409768.70               | 6" COE Brass Cap/Carsonite        | FD '12                                       |
| 1573.5           | Left         | 100+00              | 100+00.0 | 2,001.73             | 2,000.17             | 2,000.44             | 0.28          | 414748.38              | 1429907.49               | COE Brass Cap/Post                | FD '12, FD '03                               |
| 1573.5           | Left         | 111+40.97           | 111+44.1 | 1,871.27             | 1,869.71             | 1,869.74             | 0.03          | 413824.69              | 1429232.44               | 3/4" Pipe/Carsonite               | FD '12, FD '03                               |
| 1573.5           | Left         | 115+71.22           | 115+74.4 | 1,856.17             | 1,854.61             | 1,855.42             | 0.81          | 413477.23              | 1428978.64               | 1" Pipe/Carsonite                 | FD '12, NF '03, FD '78                       |
| 1573.5           | Right        | 238+51.34           | 238+47.8 | 1,859.85             | 1,858.29             | 1,858.28             | -0.01         | 403568.43              | 1421736.13               | 3/4" Pipe & Carsonite             | NF '12, FD '03, FD '78                       |
| 1573.5           | Right        | 250+91.18           | 250+86.0 | 1,936.21             | 1,934.64             | 1,934.79             | 0.15          | 402568.76              | 1421005.52               | COE Brass Cap/Carsonite           | FD '12, FD '03                               |
| 1573.5           | Right        | 256+20.83           | 256+14.7 | 2,044.96             | 2,043.39             | 2,043.71             | 0.32          | 402141.98              | 1420693.54               | COE Brass Cap/Carsonite           | FD '12, FD '03                               |
| 1570.6           | Left         | 94+65.68            | 94+65.7  | 2,201.23             | 2,199.66             | 2,199.98             | 0.32          | 406681.82              | 1441487.03               | COE Brass Cap/Carsonite           | FD '12                                       |
| 1570.6           | Left         | 100+00              | 100+00.6 | 2,010.49             | 2,008.92             | 2,009.22             | 0.30          | 406309.30              | 1441103.13               | COE Brass Cap/Carsonite           | FD '12                                       |
| 1570.6           | Left         | 113+49.6            | 113+49.9 | 1,900.60             | 1,899.03             | 1,900.08             | 1.05          | 405369.85              | 1440134.63               | 3/4" Pipe P&P                     | F <b>D '12</b> , FD '03                      |
| 1570.6           | Left         |                     | 122+39.4 | 1,860.57             | 1,859.01             |                      |               | 404750.51              | 1439496.14               | COE Aluminum Cap/Carsonite        | SET 12'                                      |
| 1570.6           | Left         | 123+92.16           |          |                      |                      | 1855.15<br>(1854.65) |               |                        |                          | 3/4" Pipe P&P                     | NF '12, FD '03, FD '78                       |
| 1570.6           | Right        | 256+52              | 255+72.0 | 1,852.83             | 1,851.26             | 1,855.40             | 4.14          | 395467.41              | 1429926.26               | 3/4" Pipe/Carsonite               | FD '12, FD '03, FD '88, FD '78               |
| 1570.6           | Right        | 275+00.54           | 274+97.8 | 2,009.27             | 2,007.69             | 2,007.93             | 0.24          | 394126.60              | 1428543.91               | COE Brass Cap/Carsonite           | FD '12, FD '03                               |
| 1567.2           | Left         | 100+00              | 100+00.0 | 1,987.14             | 1,985.60             | 1,987.00             | 1.40          | 396467.99              | 1448019.69               | COE Brass Cap/Carsonite           | FD '12, FD '03                               |
| 1567.2           | Left         | 107+00              | 107+00.3 | 1,877.65             | 1,876.11             | 1,876.51             | 0.40          | 395969.24              | 1447528.12               | COE Brass Cap/Post                | FD '12, FD '03, FD '78                       |
| 1567.2           | Right        |                     | 241+11.4 | 1,856.36             | 1,854.81             |                      |               | 386417.40              | 1438114.22               | COE Brass Cap                     | FD '12                                       |
| 1567.2           | Right        |                     | 248+39.1 | 1,880.08             | 1,878.53             |                      |               | 385899.17              | 1437603.38               | COE Brass Cap                     | FD '12                                       |
| 1567.2           | Right        | 254+63              | 254+34.6 | 1,949.44             | 1,947.89             | 1,948.04             | 0.15          | 385475.15              | 1437185.31               | COE Brass Cap/Post                | FD '12, FD '78                               |
| 1563.8           | Left         | 98+47.88            | 98+47.9  | 2,112.89             | 2,111.36             | 2,111.66             | 0.30          | 388660.77              | 1455189.53               | COE Brass Cap                     | FD '12                                       |
| 1563.8           | Left         | 100+00              | 99+99.9  | 2,115.38             | 2,113.85             | 2,114.13             | 0.29          | 388569.57              | 1455067.97               | COE Brass Cap/Post & Plate        | FD '12, FD 78                                |
| 1563.8           | Left         |                     | 105+47.3 | 1,918.47             | 1,916.94             |                      |               | 388240.85              | 1454630.17               | COE Aluminum Cap/Carsonite        | SET '12                                      |
| 1563.8           | Left         | 106+26              |          |                      |                      | 1,913.90             |               |                        |                          | Pipe                              | NF '12                                       |
| 1563.8           | Right        | 248+00              | 247+96.4 | 1,858.45             | 1,856.91             | 1,857.20             | 0.29          | 379685.15              | 1443235.64               | COE Brass Cap/Carsonite           | FD '12, FD '78                               |
| 1563.8           | Right        | 265+31.96           | 265+25.6 | 2,086.36             | 2,084.82             | 2,085.08             | 0.26          | 378647.51              | 1441852.26               | COE Brass Cap/Carsonite           | FD '12, FD '03                               |
| 1561.5           | Left         | 100+00              | 100+00.0 | 1,934.84             | 1,933.32             | 1,933.54             | 0.22          | 381156.03              | 1459385.49               | COE Brass Cap/Carsonite           | FD '12, FD '03                               |
| 1561.5           | Left         | 104+87              | 104+87.6 | 1,889.49             | 1,887.97             | 1,888.01             | 0.04          | 380811.84              | 1459040.13               | 2" Pipe/Post & Plate              | FD '12, FD '03, FD '78                       |
| 1561.5           | Right        | 220+35.17           | 220+31.5 | 1,895.25             | 1,893.72             | 1,893.80             | 0.08          | 372663.68              | 1450862.70               | COE Brass Cap/Post & Plate        | FD '12, FD '03, FD '78                       |
| 1561.5           | Right        | 223+19.98           | 223+16.1 | 1,906.26             | 1,904.73             | 1,904.92             | 0.19          | 372462.78              | 1450661.10               | COE Brass Cap/Carsonite           | FD '12, FD '03                               |
| 1557.2           | Left         | 100+08              | 100+08.0 | 1,907.36             | 1,905.83             | 1,905.70             | -0.13         | 363314.80              | 1465846.27               | COE Brass Cap/Post & Plate        | FD '12, FD '03, FD '78                       |
| 1557.2           | Left         | TBM                 |          |                      |                      | 1,858.83             |               |                        |                          |                                   | NF '12                                       |
| 1557.2           | Right        |                     | 147+07.9 | 1,882.83             | 1,881.31             | .,500.00             |               | 364111.74              | 1461214.40               | COE Brass Cap/Carsonite           | FD '12                                       |
| 1557.2           | Right        | 152+46.09           |          | 1,002.00             | 1,001.01             | 1,903.05             |               | 554111.74              | .701219.90               | Monument Monument                 | NF '12, FD '88, FD '78                       |
| 1557.2           | -            | 158+21.31           |          |                      |                      | 1,903.05             |               |                        |                          |                                   | NF 12, FD 88, FD 78<br>NF 12, FD 03, FD 88   |
|                  | Right        |                     | 100+00.0 | 2 420 44             | 2 420 00             |                      | 0.54          | 350300 40              | 1455274.04               | Monument  COE Proce Can/Corconito | NF 12, FD 103, FD 88<br>FD 12                |
| 1554.2<br>1554.2 | Left<br>Left | 100+00<br>106+86.66 | 100+00.0 | 2,130.41<br>1,882.48 | 2,128.88<br>1,880.96 | 2,129.42<br>1,880.18 | 0.54<br>-0.78 | 350329.40<br>350868.84 | 1455371.21<br>1454945.12 | COE Brass Cap/Carsonite           | FD 12. FD 78                                 |
|                  |              |                     |          |                      |                      |                      |               |                        | 1454945.12               | 1 1/2" Pipe/Post & Plate          |  |
| 1554.2           | Right        | 183+90.8            | 183+90.6 | 1,856.43             | 1,854.90             | 1,855.51             | 0.61          | 356922.89              |                          | 3/4" Pipe/Post & Plate            | FD '12, FD '78                               |
| 1554.2           | Right        | 194+85.02           | 194+82.8 | 2,026.70             | 2,025.17             | 2,025.47             | 0.30          | 357781.21              | 1449506.55               | COE Brass Cap/Post & Plate        | FD '12                                       |

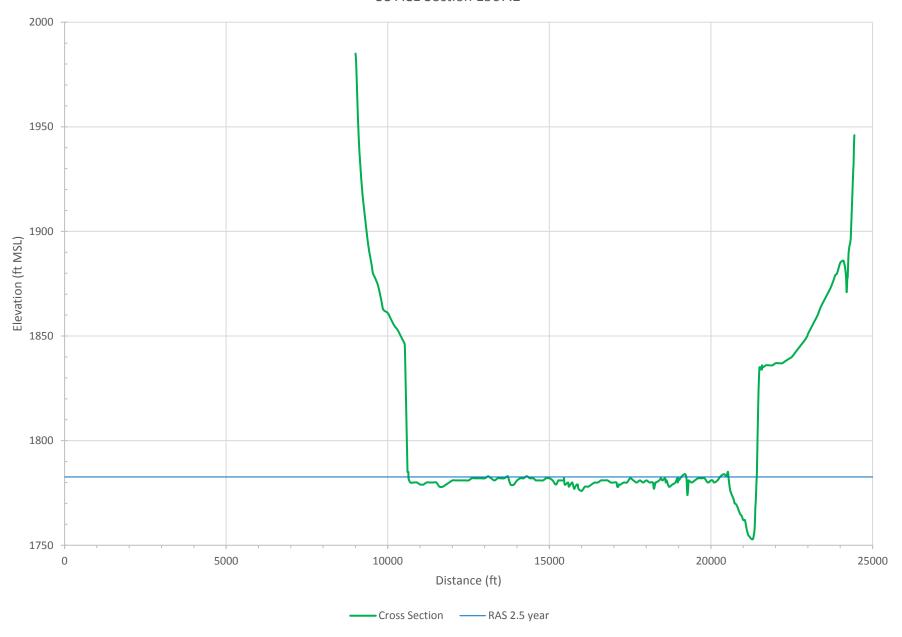
| 1554.2   |   |  |  |  |   |   |  |  |  |  |  |
|--|---|--|--|--|---|---|--|--|--|--|--|
|  | Right   | 204+06.22  | 204+03.5   | 2,023.07   | 2,021.54  | 2,021.87  | 0.33   | 358504.82  | 1448937.26   | COE Brass Cap/Carsonite  | FD '12   |
| 1548.5   | Left  | 100+00   | 100+00.0   | 2,104.67   | 2,103.13  | 2,103.44  | 0.31   | 326594.59  | 1447181.24   | COE Brass Cap/Carsonite  | FD '12   |
| 1548.5   | Left  | 111+20   |  |  |   | 1,856.45  |  |  |  | COE Monument   | NF '12, FD '78   |
| 1548.5   | Right   | 177+55   | 177+51.8   | 1,876.75   | 1,875.22  | 1,875.41  | 0.19   | 328072.99  | 1439571.74   | 3/4" Pipe/Post & Plate   | FD '12, FD '78   |
| 1548.5   | Right   | 181+48.57  | 181+53.8   | 2,007.75   | 2,006.22  | 2,006.35  | 0.13   | 328149.65  | 1439177.10   | COE Brass Cap/Carsonite  | FD '12   |
| 1545.1   | Left  | 100+00   | 100+00.0   | 2,208.17   | 2,206.63  | 2,206.89  | 0.26   | 313064.43  | 1445322.57   | COE Brass Cap/Post & Plate   | FD '12   |
| 1545.1   | Left  | 114+18.18  | 114+21.6   | 1,856.40   | 1,854.86  | 1,856.09  | 1.23   | 312357.58  | 1444089.11   | 2" Pipe/Carsonite  | FD '12, FD '78   |
| 1545.1   | Right   | 171+00   |  |  |   | 1,871.30  |  |  |  | Pipe   | NF '12, SET '78  |
| 1545.1   | Right   |  | 171+65.2   | 2,037.92   | 2,036.37  |   |  | 309503.24  | 1439104.98   | COE Brass Cap/Carsonite  | FD '12   |
| 1538.0   | Left  | 89+91.22   | 89+91.2  | 2,005.69   | 2,004.19  | 2,004.18  | -0.01  | 295639.66  | 1468765.10   | COE Brass Cap/Carsonite  | FD '12   |
| 1538.0   | Left  | 100+00   | 99+99.4  | 1,974.98   | 1,973.48  | 1,973.40  | -0.08  | 294634.97  | 1468848.53   | COE Brass Cap/Post & Plate   | FD '12   |
| 1538.0   | Left  | 102+43   | 102+49.1   | 1,868.38   | 1,866.88  | 1,873.62  | 6.74   | 294386.25  | 1468870.87   | 3/4" Pipe/Post & Plate   | FD '12, FD '78   |
| 1538.0   | Right   | 175+85.2   | 175+90.7   | 1,930.06   | 1,928.55  | 1,928.33  | -0.22  | 287069.72  | 1469477.00   | 1 1/2" Pipe/ Post & Plate  | FD '12, FD '78   |
| 1538.0   | Right   | 182+01.60  | 182+04.5   | 2,012.96   | 2,011.45  | 2,011.38  | -0.07  | 286458.05  | 1469528.15   | COE Brass Cap/Carsonite  | FD '12   |
| 1531.6   | Left  | 100+00   |  |  |   | 1,868.43  |  |  |  | Monument   | NF '12   |
| 1531.6   | Left  |  | 104+89.3   | 1,872.44   | 1,870.98  |   |  | 285349.14  | 1496890.54   | 3/8" Rebar   | SET '12  |
| 1531.6   | Left  | 107+25   |  |  |   | 1,857.56  |  |  |  | 3/4" Pin   | NF '12, FD '78   |
| 1531.6   | Right   | 172+61.5   |  |  |   | 1,865.42  |  |  |  | 3/4" Pipe  | NF ' 12, FD '78  |
| 1531.6   | Right   | 179+13.07  | 179+13.1   | 2,027.81   | 2,026.34  | 2,026.53  | 0.19   | 278045.76  | 1498221.86   | COE Brass Cap/Post & Plate   | FD '12   |
| 1528.0   | Left  | 100+00   | 100+00.0   | 1,983.16   | 1,981.73  | 1,982.06  | 0.33   | 300430.87  | 1504025.11   | COE Brass Cap/Post & Plate/Carsonite   | FD '12   |
| 1528.0   | Left  |  | 100+33.3   | 1,979.34   | 1,977.91  |   |  | 300403.40  | 1504043.87   | COE Brass Cap  | FD '12   |
| 1528.0   | Left  | 108+00   | 107+99.7   | 1,857.05   | 1,855.62  | 1,855.55  | -0.07  | 299778.33  | 1504487.38   | 3/4" Pipe/Carsonite  | FD '12, FD '78   |
| 1528.0   | Right   |  | 248+27.2   | 1,885.79   | 1,884.37  |   |  | 288337.52  | 1512603.90   | 3/4" Pipe/Post & Plate   | FD '12   |
| 1528.0   | Right   | 250+52.40  | 250+31.4   | 1,885.46   | 1,884.04  | 1,883.91  | -0.13  | 288171.06  | 1512722.22   | COE Brass Cap/Post & Plate   | FD '12, FD '78   |
| 1528.0   | Right   | 278+58.70  | 278+35.1   | 1,892.18   | 1,890.76  | 1,890.79  | 0.03   | 285884.20  | 1514344.20   | COE Brass Cap/Post & Plate   | FD '12   |
| 1524.9   | Left  | 100+00   | 100+00.0   | 1,962.54   | 1,961.14  | 1,961.30  | 0.16   | 310206.72  | 1534656.44   | COE Brass Cap/Carsonite  | FD '12, FD '78   |
| 1524.9   | Left  |  | 105+87.1   | 1,899.27   | 1,897.87  |   |  | 309756.14  | 1534280.13   | COE Brass Cap/Carsonite  | FD '12   |
| 1524.9   | Right   | 408+72.28  | 408+72.5   | 1,892.30   | 1,890.88  | 1,890.97  | 0.09   | 286510.62  | 1514867.35   | COE Brass Cap/Post & Plate   | FD '12, FD '78   |
| 1524.9   | Right   | 416+88.63  | 416+88.7   | 1,892.18   | 1,890.76  | 1,890.97  | 0.21   | 285884.20  | 1514344.20   | COE Brass Cap/Post & Plate   | FD '12, Common with 1528.0R  |
| 1517.0   | Left  |  | 10+00.0  | 1,836.45   | 1,835.07  |   |  | 273661.39  | 1536769.31   |  | WATER'S EDGE '12   |
| 1517.0   | Left  | 100+00   |  |  |   | 1,936.24  |  |  |  | Monument   | NF '12   |
|  | Left  | 113+26.15  |  |  |   | 1,895.53  |  |  |  | Brass Cap  | Set in 1978 by Sorenson & Co.  |
| 1517.0   | Left  | 120+13.6   |  |  |   | 1,867.51  |  |  |  | 3/4" Pipe  | NF '12 ,FD '78   |
| 1517.0   | Right   |  |  |  |   | 1,914.65  |  |  |  | Monument   | NF '12 ,FD '78   |
|  | rugin   | 249+68.75  |  |  |   |   |  |  |  |  |  |
| 1517.0   | Right   | 249+68.75<br>256+01.53   |  |  |   | 2,017.82  |  |  |  | Monument   | NF '12   |
| 1517.0<br>1517.0   |   |  | 132+60.7   | 1,836.51   | 1,835.12  | 2,017.82  |  | 269030.08  | 1525416.91   | Monument   | NF '12<br>WATER'S EDGE '12   |
|  | Right   |  | 132+60.7<br>100+00.0   | 1,836.51<br>1,961.40   | 1,835.12<br>1,960.04  | 2,017.82<br>1,959.91  | -0.13  | 269030.08<br>243119.23   | 1525416.91<br>1543048.68   | Monument  COE Brass Cap/Carsonite  |  |
| 1517.0   | Right<br>Right  | 256+01.53  |  |  |   |   | -0.13  |  |  |  | WATER'S EDGE '12   |
| 1517.0<br>1511.2   | Right<br>Right<br>Left  | 256+01.53<br>100+00  |  |  |   | 1,959.91  | -0.13  |  |  | COE Brass Cap/Carsonite  | WATER'S EDGE '12<br>FD '12, FD '78   |
| 1517.0<br>1511.2<br>1511.2   | Right Right Left Right  | 256+01.53<br>100+00  | 100+00.0   | 1,961.40   | 1,960.04  | 1,959.91  | -0.13  | 243119.23  | 1543048.68   | COE Brass Cap/Carsonite COE Monument   | WATER'S EDGE '12<br>FD '12, FD '78<br>NF '12, FD '78   |
| 1517.0<br>1511.2<br>1511.2<br>1511.2   | Right Right Left Right Right  | 256+01.53<br>100+00  | 100+00.0<br>261+35.3   | 1,961.40<br>1,872.28   | 1,960.04  | 1,959.91  | -0.13  | 243119.23<br>245233.87   | 1543048.68<br>1527052.56   | COE Brass Cap/Carsonite COE Monument COE Aluminum Cap/Carsonite  | WATER'S EDGE '12  FD '12, FD '78  SET '12  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2   | Right Right Left Right Right Right  | 256+01.53<br>100+00<br>260+59.88   | 100+00.0<br>261+35.3   | 1,961.40<br>1,872.28   | 1,960.04  | 1,959.91<br>1,877.03  | -0.13  | 243119.23<br>245233.87   | 1543048.68<br>1527052.56   | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  | WATER'S EDGE '12  FD '12, FD '78  NF '12, FD '78  SET '12  FD '12  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2   | Right Right Left Right Right Right Right Right  | 256+01.53<br>100+00<br>260+59.88<br>274+82.12  | 100+00.0<br>261+35.3<br>264+39.2   | 1,961.40<br>1,872.28<br>1,887.07   | 1,960.04<br>1,870.92<br>1,885.71  | 1,959.91<br>1,877.03<br>1,881.13  |  | 243119.23<br>245233.87<br>245273.73  | 1543048.68<br>1527052.56<br>1526751.26   | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4* Pipe   | WATER'S EDGE '12  FD '12, FD '78  NF '12, FD '78  SET '12  FD '12  NF '12  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6   | Right Right Left Right Right Right Right Right Left   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69  | 100+00.0<br>261+35.3<br>264+39.2<br>76+65.0  | 1,961.40<br>1,872.28<br>1,887.07   | 1,960.04<br>1,870.92<br>1,885.71<br>2,000.09  | 1,959.91<br>1,877.03<br>1,881.13<br>1,999.98  | -0.11  | 243119.23<br>245233.87<br>245273.73<br>232594.02   | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65   | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4° Pipe  COE Brass Cap/Post   | WATER'S EDGE '12  FD '12, FD '78  NF '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6   | Right Right Left Right Right Right Right Left Left  | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1   | 100+00.0<br>261+35.3<br>264+39.2<br>76+65.0<br>87+54.6   | 1,961.40<br>1,872.28<br>1,887.07<br>2,001.44<br>1,864.02   | 1,960.04<br>1,870.92<br>1,885.71<br>2,000.09<br>1,862.68  | 1,959.91<br>1,877.03<br>1,881.13<br>1,999.98<br>1,862.46  | -0.11<br>-0.21   | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01  | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41   | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4° Pipe  COE Brass Cap/Post  3/4° Pipe/Carsonite  | WATER'S EDGE '12  FD '12, FD '78  NF '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6   | Right Right Left Right Right Right Right Left Left Left   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00   | 100+00.0<br>261+35.3<br>264+39.2<br>76+65.0<br>87+54.6<br>100+00.0   | 1,861.40<br>1,872.28<br>1,887.07<br>2,001.44<br>1,864.02<br>1,883.55   | 1,870.92<br>1,885.71<br>2,000.09<br>1,862.68<br>1,882.21  | 1,959.91<br>1,877.03<br>1,881.13<br>1,999.98<br>1,862.46<br>1,881.91  | -0.11<br>-0.21<br>-0.30  | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44   | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90   | COE Brass Cap/Carsonite COE Monument COE Aluminum Capi/Carsonite COE Brass Cap/Post & Plate 4" Pipe COE Brass Cap/Post 3/4" Pipe/Carsonite COE Brass Cap/Carsonite   | WATER'S EDGE '12  FD '12, FD '78  NF '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88, FD 78   |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6   | Right Right Left Right Right Right Right Left Left Left Right   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66  | 261+35.3<br>264+39.2<br>76+65.0<br>87+54.6<br>100+00.0<br>247+50.9   | 1,961.40<br>1,872.28<br>1,887.07<br>2,001.44<br>1,864.02<br>1,883.55<br>2,032.29   | 1,960.04<br>1,870.92<br>1,885.71<br>2,000.09<br>1,862.68<br>1,862.21<br>2,030.93  | 1,959.91<br>1,877.03<br>1,881.13<br>1,999.98<br>1,862.46<br>1,881.91<br>2,031.10  | -0.11<br>-0.21<br>-0.30<br>0.17  | 243119.23<br>245233.87<br>245273.73<br>235594.02<br>231625.01<br>230517.44<br>217399.43  | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93   | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Post  | WATER'S EDGE '12  FD '12, FD '78  NF '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88, FD 78  FD '12, FD '88, FD 78  FD '12, FD '88, FD 78   |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3   | Right Right Left Right Right Right Left Left Left Left Left   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66  | 261+35.3<br>264+39.2<br>76+65.0<br>87+54.6<br>100+00.0<br>247+50.9   | 1,961.40<br>1,872.28<br>1,887.07<br>2,001.44<br>1,864.02<br>1,883.55<br>2,032.29<br>1,989.28   | 1,960.04<br>1,870.92<br>1,885.71<br>2,000.09<br>1,862.68<br>1,882.21<br>2,030.93<br>1,987.93  | 1,959.91<br>1,877.03<br>1,881.13<br>1,999.98<br>1,862.46<br>1,881.91<br>2,031.10  | -0.11<br>-0.21<br>-0.30<br>0.17  | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16   | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93   | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Post  COE Brass Cap/Post  COE Brass Cap/Post  | WATER'S EDGE '12 FD '12, FD '78 NE '12, FD '78 SET '12 FD '12 NF '12 FD '12, FD '88 FD '12, FD '88, FD 78 FD '12, FD '88, FD 78 FD '12, FD '78 FD '12, FD '78  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3   | Right Right Left Right Right Right Right Left Left Left Left Left Left  | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66  | 261+35.3<br>264+39.2<br>76+65.0<br>87+54.6<br>100+00.0<br>247+50.9<br>100+00.0   | 1,961.40<br>1,872.28<br>1,887.07<br>2,001.44<br>1,864.02<br>1,883.55<br>2,032.29<br>1,989.28<br>1,978.62                                     | 1,960.04<br>1,870.92<br>1,885.71<br>2,000.09<br>1,862.68<br>1,882.21<br>2,030.93<br>1,987.93<br>1,977.27  | 1,959.91<br>1,877.03<br>1,881.13<br>1,999.98<br>1,862.46<br>1,881.91<br>2,031.10  | -0.11<br>-0.21<br>-0.30<br>0.17  | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06  | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00   | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Post  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite   | WATER'S EDGE '12  FD '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88, FD '78  FD '12, FD '78  FD '12, FD '78  FD '12, FD '78  FD '12, FD '03, FD '78  FD '12  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3   | Right Right Left Right Right Right Right Left Left Left Left Left Left Left   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66  | 100+00.0<br>261+35.3<br>264+39.2<br>76+65.0<br>87+54.6<br>100+00.0<br>247+50.9<br>101+94.6<br>109+04.6                         | 1,961.40<br>1,872.28<br>1,887.07<br>2,001.44<br>1,864.02<br>1,883.55<br>2,032.29<br>1,978.62<br>1,978.62<br>1,877.99                         | 1,960.04<br>1,870.92<br>1,885.71<br>2,000.09<br>1,862.68<br>1,882.21<br>2,030.93<br>1,987.93<br>1,977.27<br>1,876.64  | 1,959.91<br>1,877.03<br>1,881.13<br>1,999.98<br>1,862.46<br>1,881.91<br>2,031.10  | -0.11<br>-0.21<br>-0.30<br>0.17  | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03   | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81   | COE Brass Cap/Carsonite COE Monument COE Aluminum Cap/Carsonite COE Brass Cap/Post & Plate 4" Pipe COE Brass Cap/Post 3/4" Pipe/Carsonite COE Brass Cap/Carsonite  | WATER'S EDGE '12  FD '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88, FD '78  FD '12, FD '88, FD '78  FD '12, FD '03, FD '78  FD '12, FD '03, FD '78  FD '12  FD '12  FD '12  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3<br>1499.3   | Right Right Left Right Right Right Right Left Left Left Left Left Left Left Lef   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66<br>100+00  | 100+00.0 261+35.3 264+39.2 76+65.0 87+54.6 100+00.0 247+50.9 100+04.6 259+94.0   | 1,961.40<br>1,872.28<br>1,887.07<br>2,001.44<br>1,864.02<br>1,883.55<br>2,032.29<br>1,989.28<br>1,978.62<br>1,877.99<br>1,911.76             | 1,960.04  1,870.92 1,885.71  2,000.09 1,862.68 1,882.21 2,030.93 1,987.93 1,977.27 1,876.64 1,910.42  | 1,959.91<br>1,877.03<br>1,881.13<br>1,999.98<br>1,862.46<br>1,881.91<br>2,031.10<br>1,986.08  | -0.11<br>-0.21<br>-0.30<br>0.17<br>0.15                                    | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03<br>207010.51  | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81<br>1571512.59   | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  | WATER'S EDGE '12  FD '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88, FD '78  FD '12, FD '88, FD '78  FD '12, FD '89, FD '78  FD '12, FD '80, FD '78  FD '12, FD '78  FD '12, FD '78  FD '12, FD '78  FD '12, FD '78  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3<br>1499.3<br>1499.3   | Right Right Left Right Right Right Right Left Left Left Left Left Left Left Lef   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66<br>100+00  | 76+65.0<br>87+64.6<br>100+00.0<br>247+50.9<br>100+00.0<br>247+50.9<br>100+04.6<br>259+94.0<br>261+71.6                         | 1,961.40<br>1,872.28<br>1,887.07<br>2,001.44<br>1,864.02<br>1,883.55<br>2,032.29<br>1,989.28<br>1,978.62<br>1,877.99<br>1,911.76<br>1,974.27 | 1,960.04  1,870.92 1,885.71  2,000.09 1,862.68 1,882.21 2,030.93 1,987.93 1,977.27 1,876.64 1,910.42 1,972.93   | 1,959.91<br>1,877.03<br>1,881.13<br>1,999.98<br>1,862.46<br>1,881.91<br>2,031.10<br>1,988.08  | -0.11<br>-0.21<br>-0.30<br>0.17<br>0.15                                    | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03<br>207010.51<br>206836.22                           | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81<br>1571512.59   | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  1" Pipe/P&P  4" Pipe/ Carsonite  | WATER'S EDGE '12  FD '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88  FD '12, FD '88, FD 78  FD '12, FD '03, FD '78  FD '12, FD '03, FD '78  FD '12, FD '03, FD '78  FD '12, FD ' |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3   | Right Right Left Right Right Right Right Left Left Left Left Left Left Left Lef   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66<br>100+00<br>260+03.6<br>261.81.07<br>265+86.87  | 76+65.0<br>87+54.6<br>100+00.0<br>247+50.9<br>100+00.0<br>247+50.9<br>100+04.6<br>259+94.0<br>261+71.6<br>265+77.4             | 1,961.40  1,872.28 1,887.07  2,001.44 1,864.02 1,883.55 2,032.29 1,989.28 1,978.62 1,877.99 1,911.76 1,974.27 1,976.73                       | 1,960.04  1,870.92 1,885.71  2,000.09 1,862.68 1,882.21 2,030.93 1,987.93 1,977.27 1,876.64 1,972.93 1,975.39   | 1,959.91<br>1,877.03<br>1,881.13<br>1,999.98<br>1,862.46<br>1,881.91<br>2,031.10<br>1,988.08  | -0.11<br>-0.21<br>-0.30<br>0.17<br>0.15                                    | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03<br>207010.51<br>206836.22<br>206437.83              | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81<br>1571512.59<br>1571478.62<br>1571401.42               | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  4" Pipe/Post  4" Pipe/Post  4" Pipe/Post  4" Pipe/Carsonite  COE Brass Cap/Carsonite  | WATER'S EDGE '12  FD '12, FD '78  SET '12  FD '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88, FD 78  FD '12, FD '89, FD 78  FD '12, FD '03, FD '78  FD '12, FD '78  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3   | Right Right Left Right Right Right Right Left Left Left Left Left Left Left Lef   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66<br>100+00<br>260+03.6<br>261-81.07<br>265+96.87<br>95+34.64  | 76+65.0<br>87+54.6<br>100+00.0<br>247+50.9<br>100+00.0<br>247+50.9<br>100+04.6<br>259+94.0<br>261+71.6<br>265+77.4             | 1,961.40  1,872.28 1,887.07  2,001.44 1,864.02 1,883.55 2,032.29 1,989.28 1,978.62 1,877.99 1,911.76 1,974.27 1,976.73                       | 1,960.04  1,870.92 1,885.71  2,000.09 1,862.68 1,882.21 2,030.93 1,987.93 1,977.27 1,876.64 1,972.93 1,975.39   | 1,959,91 1,877,03  1,881,13 1,999,98 1,862,46 1,881,91 2,031,10 1,988,08  | -0.11<br>-0.21<br>-0.30<br>0.17<br>0.15                                    | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03<br>207010.51<br>206836.22<br>206437.83              | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81<br>1571512.59<br>1571478.62<br>1571401.42               | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  1" Pipe/P&P  4" Pipe/ Carsonite  COE Brass Cap/Carsonite  | WATER'S EDGE '12  FD '12, FD '78  SET '12  FD '12  FD '12  FD '12  FD '12, FD '88  FD '12, FD '88, FD 78  FD '12, FD '88, FD 78  FD '12, FD '03, FD '78  FD '12  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3   | Right Right Left Right Right Right Right Right Left Left Left Left Left Left Left Lef   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66<br>100+00<br>260+03.6<br>261.81.07<br>265+86.87<br>95+34.64<br>99+16   | 76+65.0<br>87+54.6<br>100+00.0<br>247+50.9<br>100+00.0<br>247+50.9<br>100+04.6<br>259+94.0<br>261+71.6<br>265+77.4             | 1,961.40  1,872.28 1,887.07  2,001.44 1,864.02 1,883.55 2,032.29 1,989.28 1,978.62 1,877.99 1,911.76 1,974.27 1,976.73                       | 1,960.04  1,870.92 1,885.71  2,000.09 1,862.68 1,882.21 2,030.93 1,987.93 1,977.27 1,876.64 1,972.93 1,975.39   | 1,959,91 1,877,03  1,881,13 1,999,98 1,862,46 1,881,91 2,031,10 1,988,08  1,910,31 1,973,15 1,975,50 1,895,27 1,891,40                                      | -0.11<br>-0.21<br>-0.30<br>0.17<br>0.15                                    | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03<br>207010.51<br>206836.22<br>206437.83              | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81<br>1571512.59<br>1571478.62<br>1571401.42               | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  4" Pipe/Post  "Pipe/Post  "Pipe/Post  COE Brass Cap/Carsonite   | WATER'S EDGE '12  FD '12, FD '78  SET '12  FD '12  FD '12  FD '12  FD '12, FD '88  FD '12, FD '88, FD 78  FD '12, FD '88, FD 78  FD '12, FD '03, FD 778  FD '12  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1490.3<br>1490.3<br>1490.3<br>1490.3           | Right Right Left Right Right Right Right Right Left Left Left Left Left Left Left Lef   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66<br>100+00<br>260+03.6<br>261.81.07<br>265+86.87<br>95+34.64<br>99+16<br>216+47.52                                  | 261+35.3<br>264+39.2<br>76+65.0<br>87+54.6<br>100+00.0<br>247+50.9<br>101+94.6<br>109+04.6<br>259+94.0<br>261+71.6<br>265+77.4 | 1,961.40  1,872.28 1,887.07  2,001.44 1,864.02 1,883.55 2,032.29 1,989.28 1,978.62 1,877.99 1,911.76 1,974.27 1,976.73 1,896.74              | 1,960.04  1,870.92 1,885.71  2,000.09 1,862.68 1,882.21 2,030.93 1,987.93 1,977.27 1,876.64 1,910.42 1,972.93 1,975.39 1,895.40                             | 1,959,91 1,877,03  1,881,13 1,999,98 1,862,46 1,881,91 2,031,10 1,988,08  1,910,31 1,973,15 1,975,50 1,895,27 1,891,40 1,902,45                             | -0.11<br>-0.21<br>-0.30<br>0.17<br>0.15<br>-0.11<br>0.22<br>0.11           | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03<br>207010.51<br>206836.22<br>206437.83<br>203178.55 | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81<br>1571512.59<br>1571478.62<br>1571401.42<br>1606112.42 | COE Brass Cap/Carsonite  COE Aluminum Cap/Carsonite  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  1" Pipe/P&P  4" Pipe/ Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  1" COE Brass Cap/Carsonite  | WATER'S EDGE '12  FD '12, FD '78  NF '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88  FD '12, FD '88, FD 78  FD '12, FD '03, FD 78  FD '12  FD '1 |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1490.3<br>1490.3<br>1490.3<br>1490.3                     | Right Right Left Right Right Right Right Right Left Left Left Left Left Left Left Lef   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66<br>100+00<br>260+03.6<br>261.81.07<br>265+86.87<br>95+34.64<br>99+16<br>216+47.52                                  | 100+00.0 261+35.3 264+39.2 76+65.0 87+54.6 100+00.0 247+50.9 100+00.0 101+94.6 109+04.6 259+94.0 261+71.6 265+77.4 95+34.6     | 1,961.40  1,872.28 1,887.07  2,001.44 1,864.02 1,883.55 2,032.29 1,989.28 1,978.62 1,877.99 1,911.76 1,974.27 1,976.73 1,896.74              | 1,960.04  1,870.92 1,885.71  2,000.09 1,862.68 1,882.21 2,030.93 1,987.93 1,977.27 1,876.64 1,910.42 1,972.93 1,975.39 1,895.40  1,902.86 1,914.93          | 1,959,91 1,877,03  1,881,13 1,999,98 1,862,46 1,881,91 2,031,10 1,988,08  1,910,31 1,973,15 1,975,50 1,895,27 1,891,40 1,902,45                             | -0.11<br>-0.21<br>-0.30<br>0.17<br>0.15<br>-0.11<br>0.22<br>0.11<br>-0.13  | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03<br>207010.51<br>206836.22<br>206437.83<br>203178.55 | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81<br>1571512.59<br>1571478.62<br>1571401.42<br>1606112.42 | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  1" Pipe/P&P  4" Pipe/ Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  1" Pipe/P&P  4" Pipe/ Carsonite  COE Brass Cap/Carsonite   | WATER'S EDGE '12  FD '12, FD '78  NF '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88  FD '12, FD '88, FD 78  FD '12, FD '88, FD 78  FD '12, FD '03, FD 78  FD '12   |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1490.3<br>1490.3<br>1490.3<br>1490.3<br>1490.3           | Right Right Left Right Right Right Right Left Left Left Left Left Left Left Lef   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66<br>100+00<br>260+03.6<br>261.81.07<br>265+86.87<br>95+34.64<br>99+16<br>216+47.52<br>223+00.17<br>100+00           | 100+00.0 261+35.3 264+39.2 76+65.0 87+54.6 100+00.0 247+50.9 100+00.0 101+94.6 109+04.6 259+94.0 261+71.6 265+77.4 95+34.6     | 1,961.40  1,872.28 1,887.07  2,001.44 1,864.02 1,883.55 2,032.29 1,989.28 1,978.62 1,977.99 1,911.76 1,974.27 1,976.73 1,896.74              | 1,960.04  1,870.92 1,885.71  2,000.09 1,862.68 1,862.21 2,030.93 1,987.93 1,977.27 1,876.64 1,910.42 1,972.93 1,975.39 1,895.40  1,902.86 1,914.93 1,937.61 | 1,959,91 1,877,03  1,881,13 1,999,98 1,862,46 1,881,91 2,031,10 1,988,08  1,910,31 1,973,15 1,975,50 1,895,27 1,891,40 1,902,45  1,914,91 1,897,38          | -0.11<br>-0.21<br>-0.30<br>0.17<br>0.15<br>-0.11<br>-0.22<br>0.11<br>-0.13 | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03<br>207010.51<br>206836.22<br>206437.83<br>203178.55 | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81<br>1571512.59<br>1571478.62<br>1571401.42<br>1606112.42 | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  1" Pipe/P&P  4" Pipe/ Carsonite  COE Brass Cap/Carsonite   | WATER'S EDGE '12  FD '12, FD '78  NF '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88  FD '12, FD '88, FD 78  FD '12, FD '03, FD 78  FD '12  |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1490.3<br>1490.3<br>1490.3<br>1490.3<br>1490.3<br>1490.3 | Right Right Right Right Right Right Right Left Left Left Left Left Left Left Right Right Right Right Right Left Left Right Right Left Left Right Left Left Left Right Right Left Left Right Left Left | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66<br>100+00<br>260+03.6<br>261.81.07<br>265+86.87<br>95+34.64<br>99+16<br>216+47.52<br>223+00.17<br>100+00<br>107+50 | 100+00.0 261+35.3 264+39.2 76+65.0 87+54.6 100+00.0 247+50.9 100+00.0 101+94.6 109+04.6 259+94.0 261+71.6 265+77.4 95+34.6     | 1,961.40  1,872.28 1,887.07  2,001.44 1,864.02 1,883.55 2,032.29 1,989.28 1,978.62 1,877.99 1,911.76 1,974.27 1,976.73 1,896.74              | 1,960.04  1,870.92 1,885.71  2,000.09 1,862.68 1,882.21 2,030.93 1,987.93 1,977.27 1,876.64 1,910.42 1,972.93 1,975.39 1,895.40  1,902.86 1,914.93          | 1,959,91 1,877,03  1,881,13 1,999,98 1,862,46 1,881,91 2,031,10 1,968,08  1,910,31 1,973,15 1,975,50 1,995,27 1,891,40 1,902,45  1,914,91 1,897,38 1,897,38 | -0.11<br>-0.21<br>-0.30<br>0.17<br>0.15<br>-0.11<br>0.22<br>0.11<br>-0.13  | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03<br>207010.51<br>206836.22<br>206437.83<br>203178.55 | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81<br>1571512.59<br>1571478.62<br>1571401.42<br>1606112.42 | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  1" Pipe/P&P  4" Pipe/ Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite | WATER'S EDGE '12  FD '12, FD '78  SET '12  FD '12  FD '12  FD '12, FD '88  FD '12, FD '88  FD '12, FD '88, FD 78  FD '12, FD '03, FD 78  FD '12  FD '13  FD '1 |
| 1517.0<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1511.2<br>1506.6<br>1506.6<br>1506.6<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1499.3<br>1490.3<br>1490.3<br>1490.3<br>1490.3<br>1490.3           | Right Right Left Right Right Right Right Left Left Left Left Left Left Left Lef   | 256+01.53<br>100+00<br>260+59.88<br>274+82.12<br>76+09.69<br>87+54.1<br>100+00<br>247+56.66<br>100+00<br>260+03.6<br>261.81.07<br>265+86.87<br>95+34.64<br>99+16<br>216+47.52<br>223+00.17<br>100+00           | 100+00.0 261+35.3 264+39.2 76+65.0 87+54.6 100+00.0 247+50.9 100+00.0 101+94.6 109+04.6 259+94.0 261+71.6 265+77.4 95+34.6     | 1,961.40  1,872.28 1,887.07  2,001.44 1,864.02 1,883.55 2,032.29 1,989.28 1,978.62 1,977.99 1,911.76 1,974.27 1,976.73 1,896.74              | 1,960.04  1,870.92 1,885.71  2,000.09 1,862.68 1,862.21 2,030.93 1,987.93 1,977.27 1,876.64 1,910.42 1,972.93 1,975.39 1,895.40  1,902.86 1,914.93 1,937.61 | 1,959,91 1,877,03  1,881,13 1,999,98 1,862,46 1,881,91 2,031,10 1,988,08  1,910,31 1,973,15 1,975,50 1,895,27 1,891,40 1,902,45  1,914,91 1,897,38          | -0.11<br>-0.21<br>-0.30<br>0.17<br>0.15<br>-0.11<br>-0.22<br>0.11<br>-0.13 | 243119.23<br>245233.87<br>245273.73<br>232594.02<br>231625.01<br>230517.44<br>217399.43<br>222712.16<br>222521.06<br>221824.03<br>207010.51<br>206836.22<br>206437.83<br>203178.55 | 1543048.68<br>1527052.56<br>1526751.26<br>1545050.65<br>1544552.41<br>1543982.90<br>1537236.93<br>1574556.84<br>1574520.00<br>1574384.81<br>1571512.59<br>1571478.62<br>1571401.42<br>1606112.42 | COE Brass Cap/Carsonite  COE Monument  COE Aluminum Cap/Carsonite  COE Brass Cap/Post & Plate  4" Pipe  COE Brass Cap/Post  3/4" Pipe/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  COE Brass Cap/Carsonite  1" Pipe/P&P  4" Pipe/ Carsonite  COE Brass Cap/Carsonite   | WATER'S EDGE '12  FD '12, FD '78  NF '12, FD '78  SET '12  FD '12  NF '12  FD '12, FD '88  FD '12, FD '88  FD '12, FD '88, FD 78  FD '12, FD '03, FD 78  FD '12  |

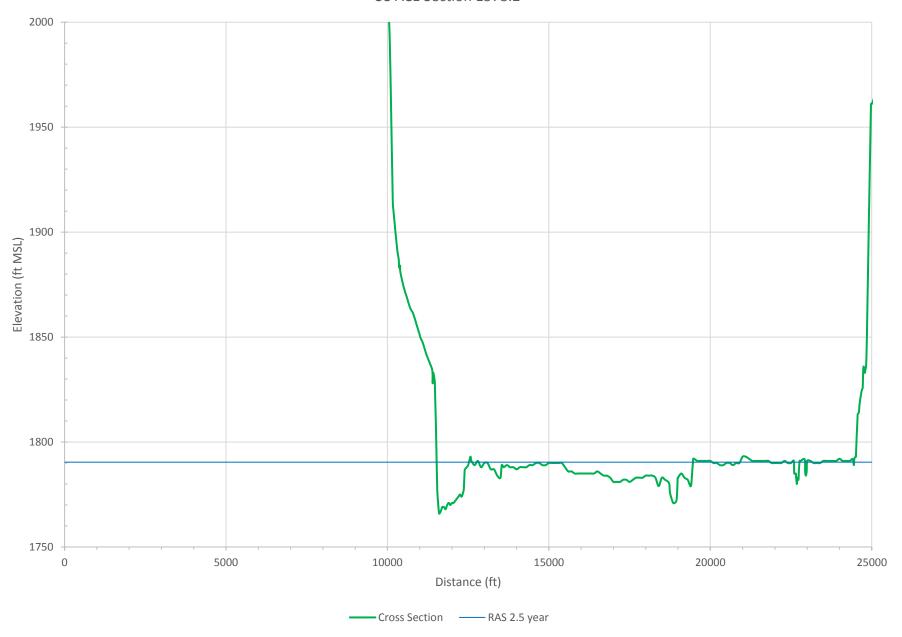
| 1485.4 | Right | 333+01.11 | 332+87.2 | 1,905.32 | 1,904.02 | 1,903.89 | -0.13 | 179698.32  | 1625695.15 | COE Brass Cap/Post & Plate            | FD '12                                       |
|--------|-------|-----------|----------|----------|----------|----------|-------|------------|------------|---------------------------------------|--|
| 1482.3 | Left  | 100+00    | 100+00.0 | 1,927.90 | 1,926.58 | 1,926.49 | -0.09 | 205651.78  | 1640449.20 | COE Brass Cap/Carsonite               | FD '12, FD'03                                |
| 1482.3 | Left  | 100.00    | 102+75.0 | 1,871.15 | 1,869.83 | 1,020.10 | 0.00  | 205376.86  | 1640454.42 | COE Aluminum Cap/ Carsonite           | SET '12                                      |
| 1482.3 | Left  | 104+24.10 | 102-10.0 | 1,011.10 | 1,000.00 | 1,855.40 |       | 200010.00  | 1010101.12 | COE Monument/Carsonite                | NF '12, FD '03, FD '78                       |
| 1482.3 | Right | 101-21.10 | 394+42.0 | 1,875.97 | 1,874.68 | 1,000.10 |       | 176215.10  | 1641006.81 | COE Brass Cap/Carsonite               | FD '12                                       |
| 1482.3 | Right | 400+21.41 | 400+18.3 | 1,885.84 | 1,884.55 | 1,884.54 | -0.01 | 175638.46  | 1640994.43 | COE Brass Cap/Post & Plate            | FD '12, FD '78                               |
| 1476.8 | Left  | 400121.41 | 92+30.6  | 1,865.61 | 1,864.32 | 1,004.04 | -0.01 | 202208.14  | 1665398.31 | COE Brass Cap/Carsonite               | FD 112                                       |
| 1476.8 | Left  | 100+00    | 32100.0  | 1,000.01 | 1,004.02 | 1,915.42 |       | 202200.14  | 1000000.01 | COE Monument Post & Plate             | NF '12, FD '03, FD '78                       |
| 1476.8 | Right | 246+22.78 | 246+23.1 | 1,924.82 | 1,923.55 | 1,923.64 | 0.09  | 186833.52  | 1664656.81 | COE Brass Cap/Carsonite               | FD '12, FD '03, FD '78                       |
| 1476.8 | Right | 251+82.68 | 251+82.8 | 1,936.42 | 1,935.15 | 1,935.19 | 0.04  | 186274.51  | 1664629.68 | 3/4" Pipe                             | FD 12  |
| 1476.8 | Right | 251+88.02 | 251+88.0 | 1,937.39 | 1,936.12 | 1,936.10 | -0.02 | 186269.26  | 1664629.44 | COE Brass Cap/Carsonite/P&P           | FD '12. FD '03                               |
|        |       | 231+00.02 | 97+99.8  |          | *        | 1,930.10 | -0.02 |            |            | · · · · · · · · · · · · · · · · · · · | FD '12                                       |
| 1469.9 | Left  | 400.00    | 100+00.0 | 1,931.83 | 1,930.56 | 4 000 04 | 0.44  | 207701.31  | 1697778.26 | COE Brass Cap/Carsonite               |  |
| 1469.9 | Left  | 100+00    | 100+00.0 | 1,931.25 | 1,929.98 | 1,929.84 | -0.14 | 207504.02  | 1697812.02 | COE Brass Cap/Carsonite/P&P           | FD '12, FD '03, FD '78                       |
| 1469.9 | Left  |           |          |          |          |          |       |            |            | Unknown dia Pipe                      | NF '12, FD '03                               |
| 1469.9 | Left  | 040.07.70 |          | 4.040.00 |          |          |       | 100105 70  | 4700000 50 | COE Brass Cap                         | NF '12, FD '03, Set '88                      |
| 1469.9 | Right | 242+27.76 | 242+20.4 | 1,949.30 | 1,948.02 | 1,947.91 | -0.11 | 193485.70  | 1700200.58 | COE Brass Cap/Carsonite/P&P           | FD '12, FD '03, FD '78                       |
| 1469.9 | Right | 248+37.53 | 248+33.5 | 1,961.86 | 1,960.58 | 1,959.08 | -1.50 | 192881.30  | 1700303.49 | COE Brass Cap/Carsonite               | FD '12, FD '03                               |
| 1465.8 | Left  | 100+00    |          | 4 000 00 | 4 004 00 | 1,909.19 |       | 0.45740.07 | 4700074.00 | COE Brass Cap                         | NF '12, FD' 03, FD '78                       |
| 1465.8 | Left  |           | 106+21.1 | 1,892.66 | 1,891.36 |          |       | 215719.87  | 1720874.38 | COE Brass Cap/Post & Plate            | FD '12                                       |
| 1465.8 | Right | 146+58    |          |          |          |          |       |            |            | COE Monument/Carsonite                | NF '12, FD '03, SET '88                      |
| 1465.8 | Right | 265+76.5  |          |          |          | 1,906.70 |       |            |            | Unknown dia Pipe                      | NF '12, FD '88, FD '78                       |
| 1465.8 | Right |           | 266+26.5 | 1,919.94 | 1,918.65 |          |       | 199751.92  | 1719780.50 | COE Brass Cap/Carsonite               | FD '12                                       |
| 1465.8 | Right | 271+07.10 |          |          |          | 1,921.79 |       |            |            | COE Monument/Carsonite                | NF '12, FD '03, FD '78                       |
| 1465.8 | Right | 273+90.66 | 273+90.7 | 1,920.83 | 1,919.54 | 1,919.38 | -0.16 | 198989.54  | 1719728.45 | COE Brass Cap/Post & Plate            | FD '12, FD '03                               |
| 1461.6 | Left  | 100+00    | 100+00.0 | 1,905.54 | 1,904.24 | 1,904.00 | -0.24 | 214596.56  | 1742646.39 | COE Brass Cap/Post & Plate            | FD '12, FD '03, FD '78                       |
| 1461.6 | Right | 309+30.5  | 309+19.6 | 1,873.67 | 1,872.36 | 1,871.78 | -0.58 | 194686.96  | 1736224.61 | 1-1/2" Pipe/Carsonite                 | FD '12, FD '03, FD '78                       |
| 1461.6 | Right | 318+11.15 | 318+00.7 | 1,882.38 | 1,881.07 | 1,880.87 | -0.20 | 193848.44  | 1735954.06 | COE Brass Cap/Post & Plate            | FD '12, FD '03, Common with 1459.5L &1456.6R |
| 1461.6 | Right | 323+98.62 | 323+87.9 | 1,877.29 | 1,875.98 | 1,875.61 | -0.37 | 193289.61  | 1735773.94 | COE Brass Cap/Post & Plate            | FD '12, FD '03                               |
| 1459.5 | Left  |           | 90+88.3  | 1,880.36 | 1,879.04 |          |       | 200014.10  | 1754638.25 | COE Brass Cap/Post & Plate            | FD '12, FD '03,FD '78                        |
| 1459.5 | Left  | 100+00    |          |          |          | 1,872.90 |       |            |            | Unknown/Carsonite/Post& Plate         | NF' 12                                       |
| 1459.5 |       |           | 284+03.4 | 1,856.65 | 1,855.34 |          |       | 193961.35  | 1736295.95 | Post & Plate                          | FD '12                                       |
| 1459.5 | Right | 287+63.37 | 287+63.5 | 1,882.38 | 1,881.07 | 1,880.87 | -0.20 | 193848.44  | 1735954.06 | COE Brass Cap/Post & Plate            | FD '12, FD '03,FD '78                        |
| 1459.5 | Right | 290+35.15 | 290+35.2 | 1,877.59 | 1,876.28 | 1,876.19 | -0.09 | 193763.23  | 1735696.12 | COE Monument/Post & Plate             | FD '12, FD '03                               |
| 1456.6 | Left  | 100+00    | 100+00.0 | 1,982.00 | 1,980.67 | 1,980.79 | 0.13  | 185693.67  | 1753347.57 | COE Brass Cap/Post & Plate            | FD '12, FD '03, FD '78                       |
| 1456.6 | Left  |           | 105+99.9 | 1,952.67 | 1,951.34 |          |       | 185948.49  | 1752804.43 | COE Brass Cap/Carsonite               | FD '12                                       |
| 1456.6 | Right | 288+39.07 | 288+37.5 | 1,857.04 | 1,855.73 | 1,855.59 | -0.14 | 193690.05  | 1736291.49 | 1/2" Pipe/Post & Plate                | FD '12, FD '03, FD '78                       |
| 1456.6 | Right | 292+22.87 | 292+10.3 | 1,882.38 | 1,881.07 | 1,880.87 | -0.20 | 193848.44  | 1735954.06 | COE Monument/Post & Plate             | FD '12, FD '03, Common with 1459.5L          |
| 1456.6 | Right | 293+78.20 | 293+65.5 | 1,880.11 | 1,878.80 | 1,878.76 | -0.04 | 193914.38  | 1735813.52 | COE Monument/Post & Plate             | FD '12, FD '03                               |

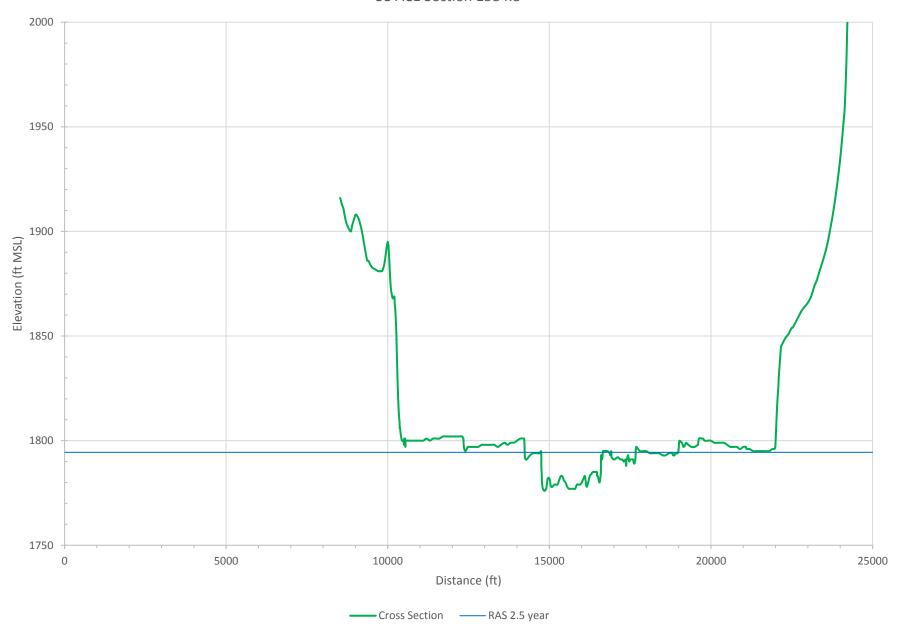


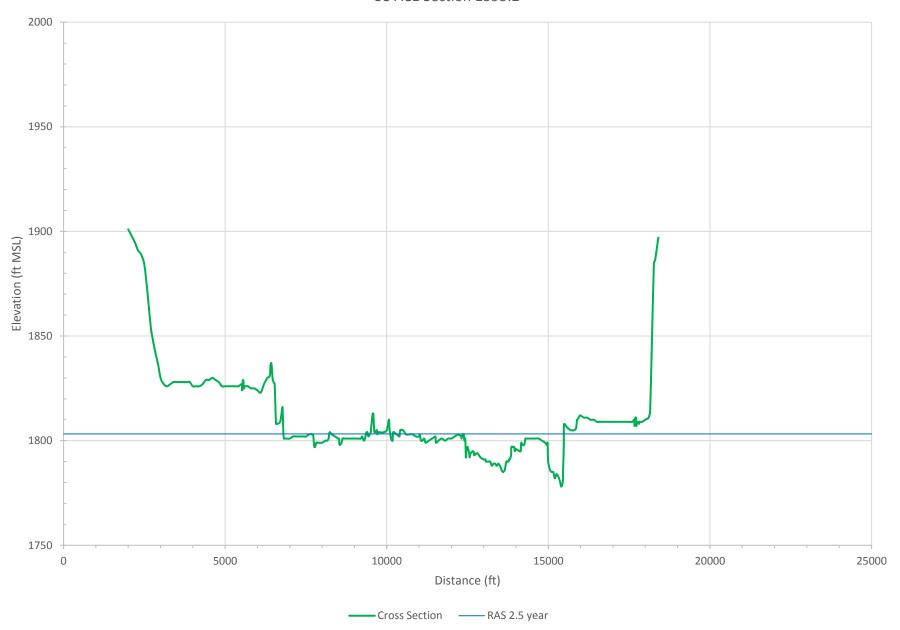
## Plots of cross sections received in DSS format from the USACE 10/11/17

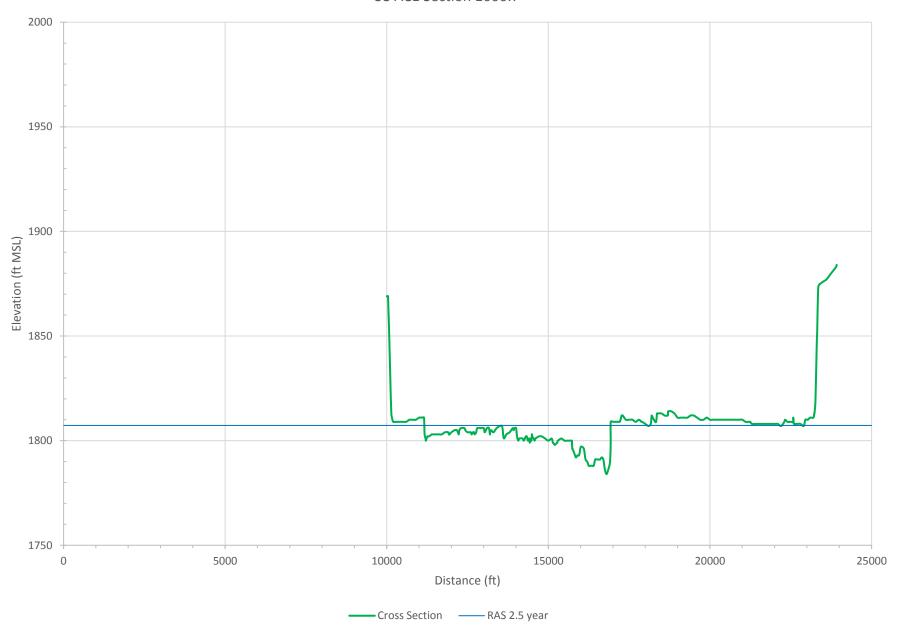


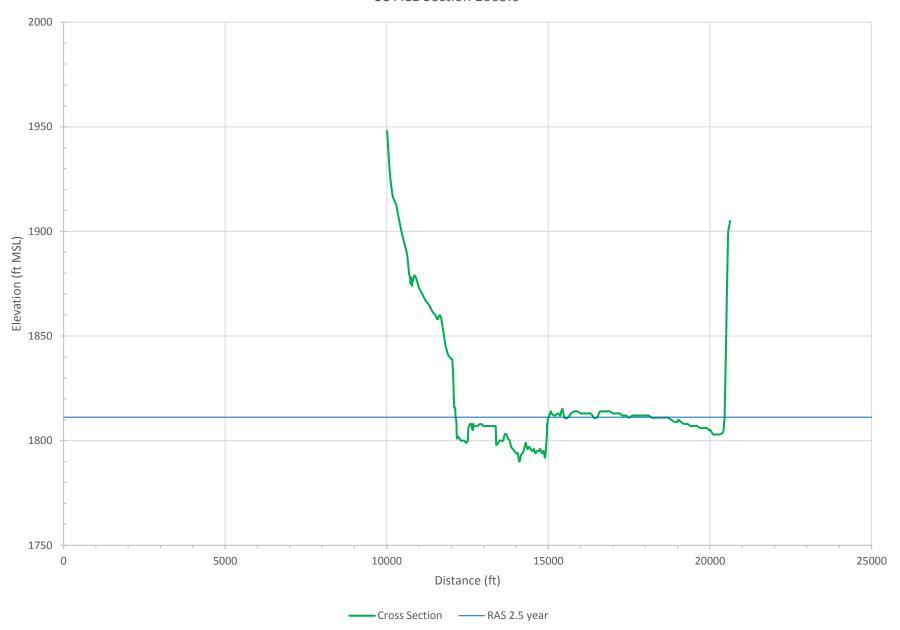


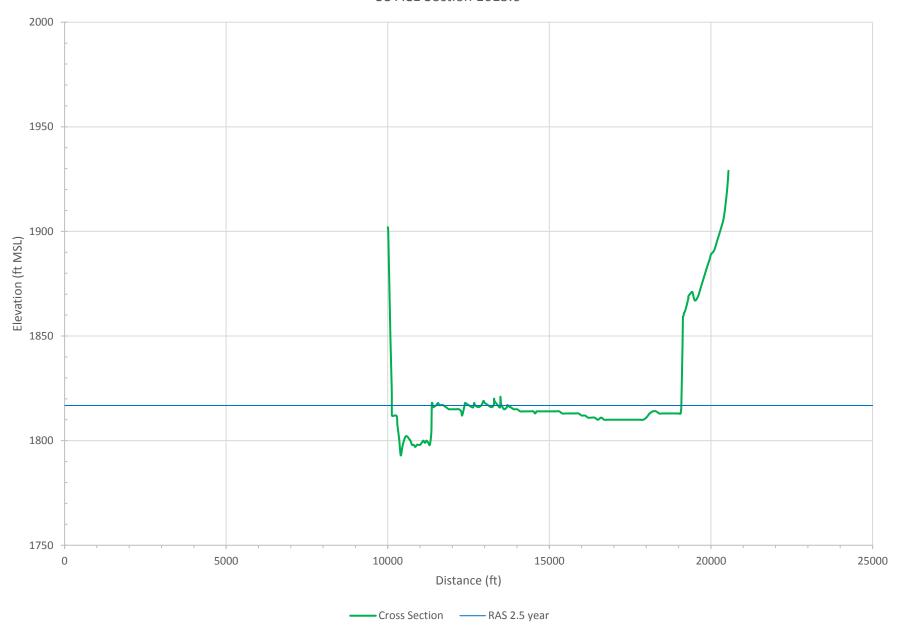


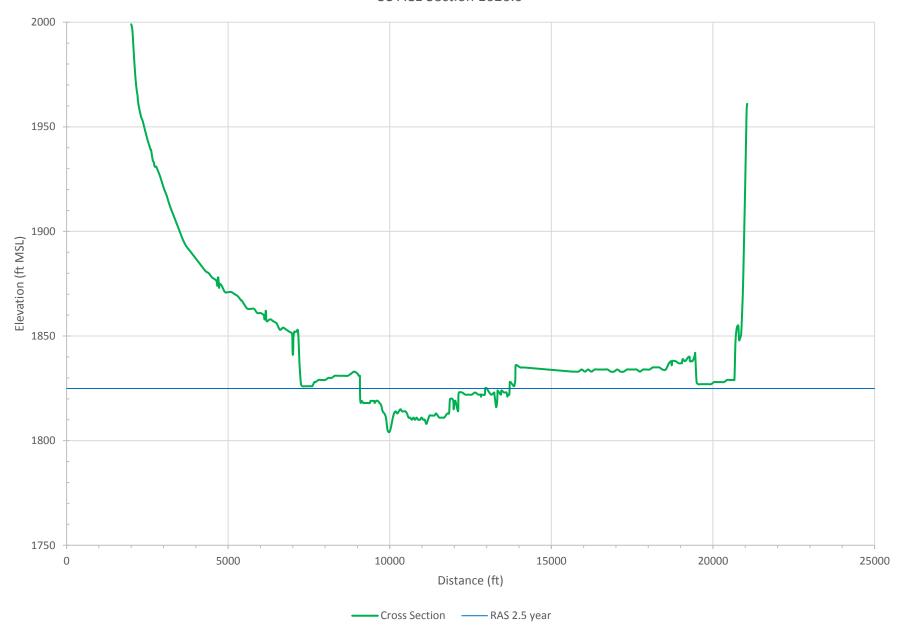


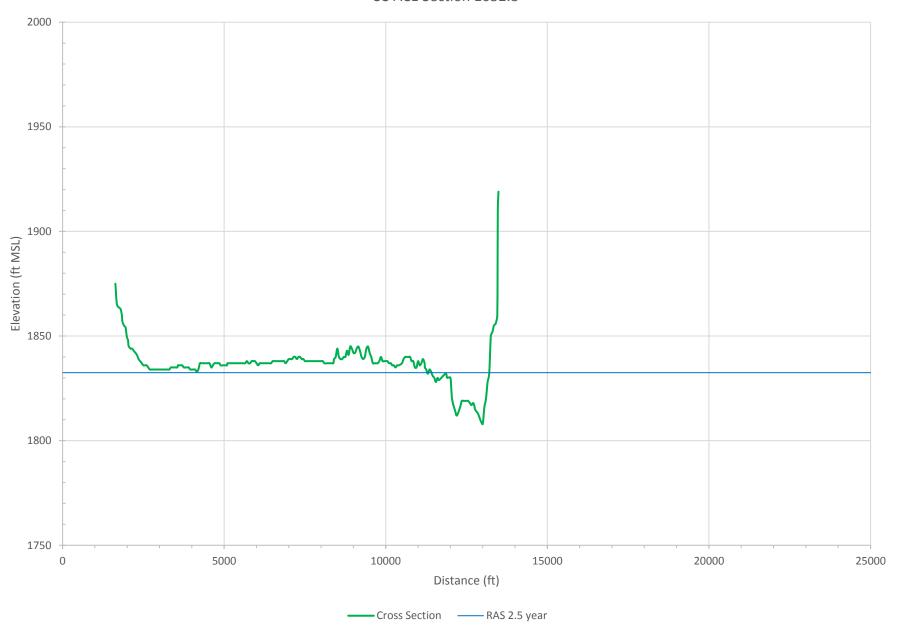


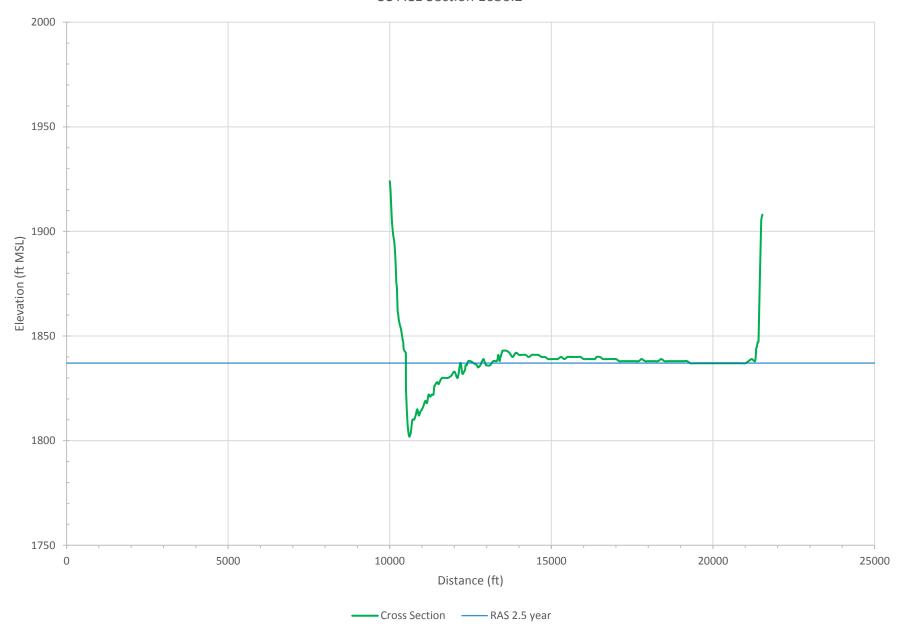


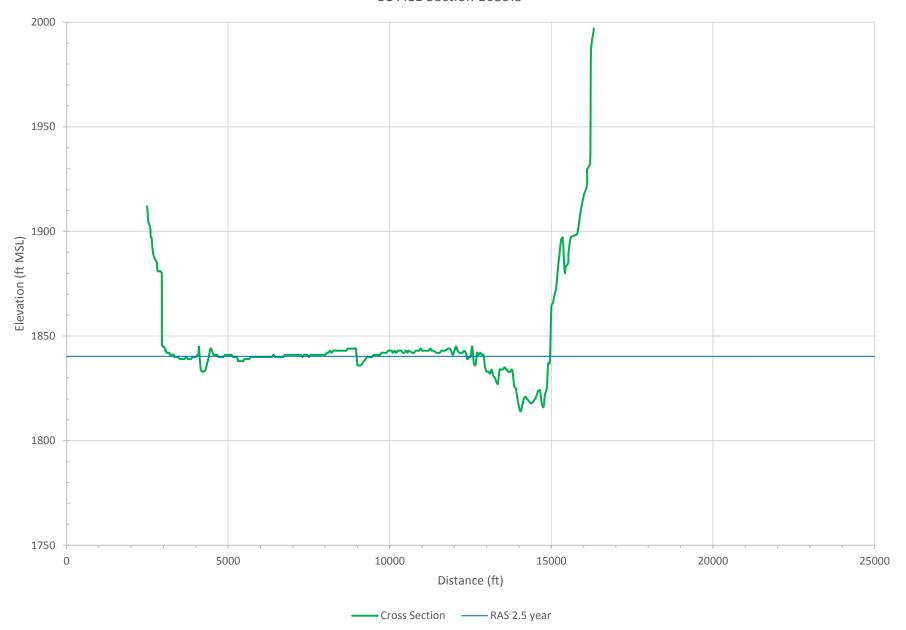


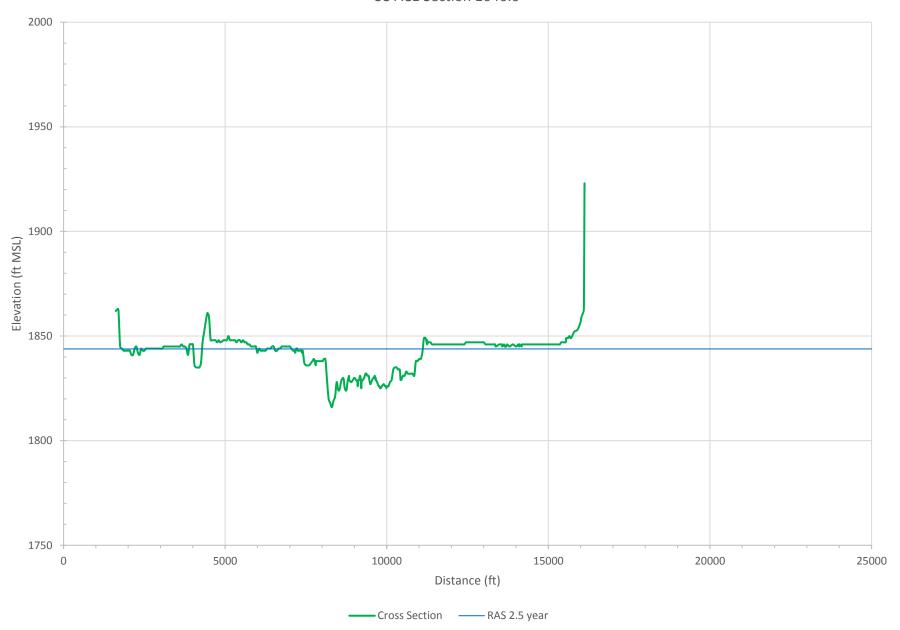


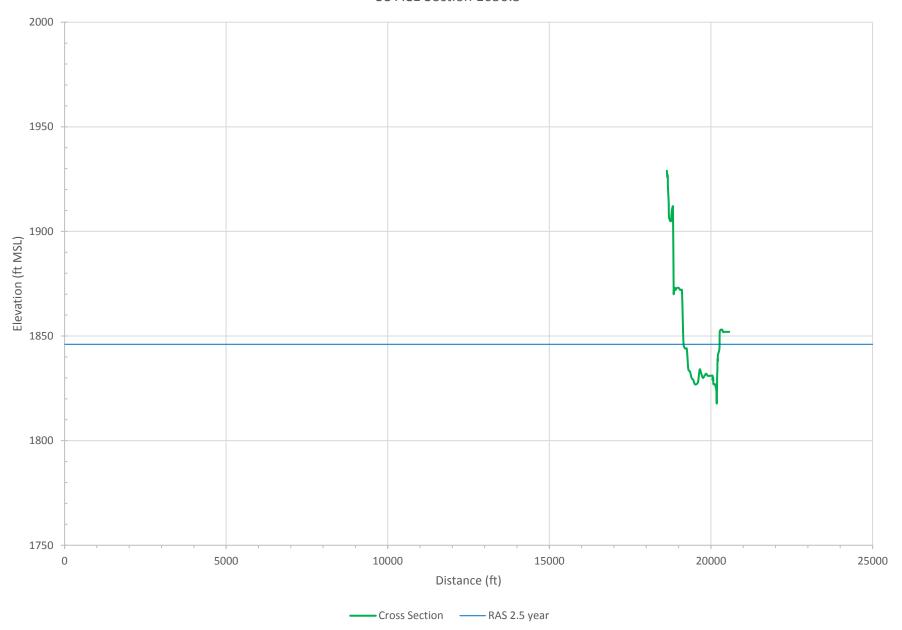


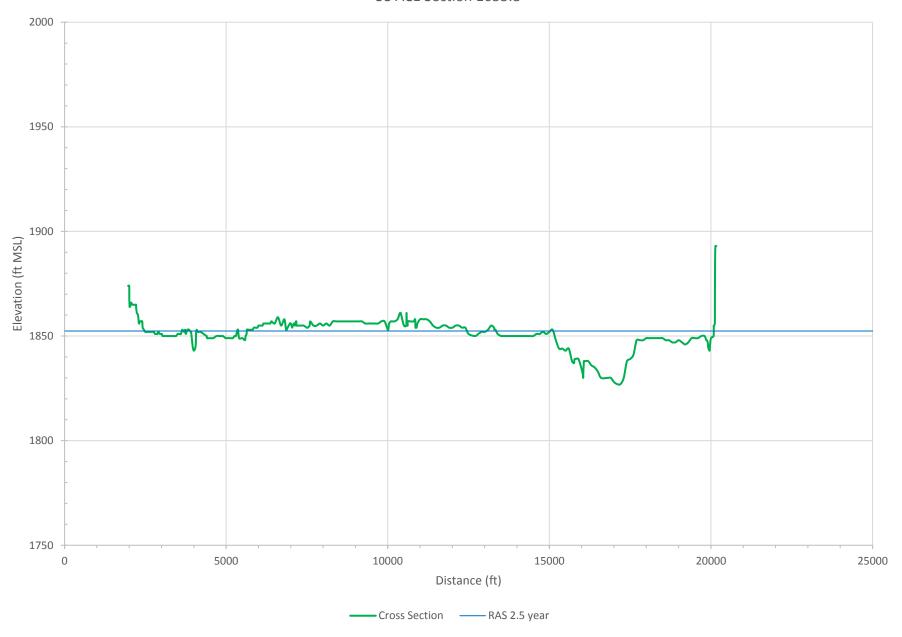


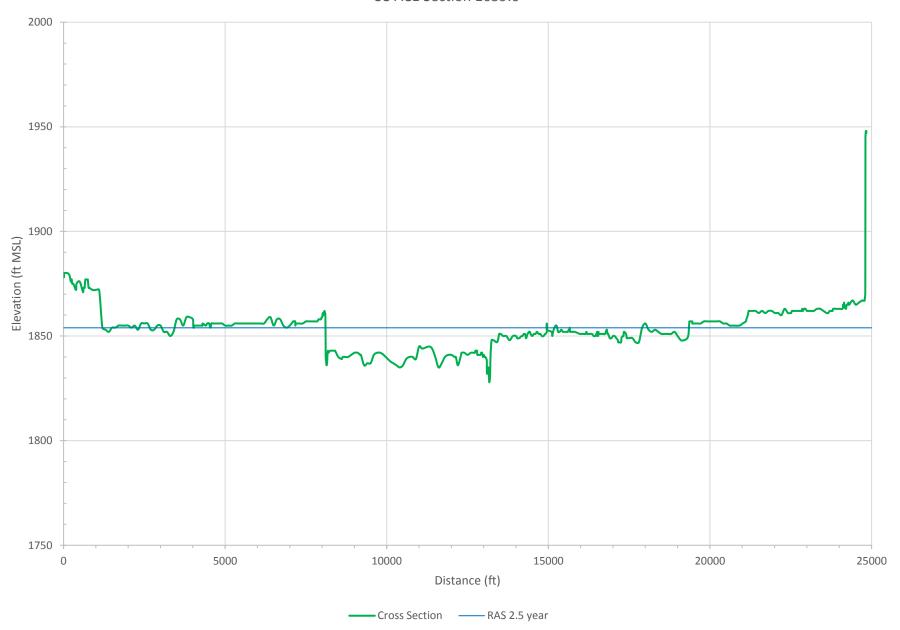


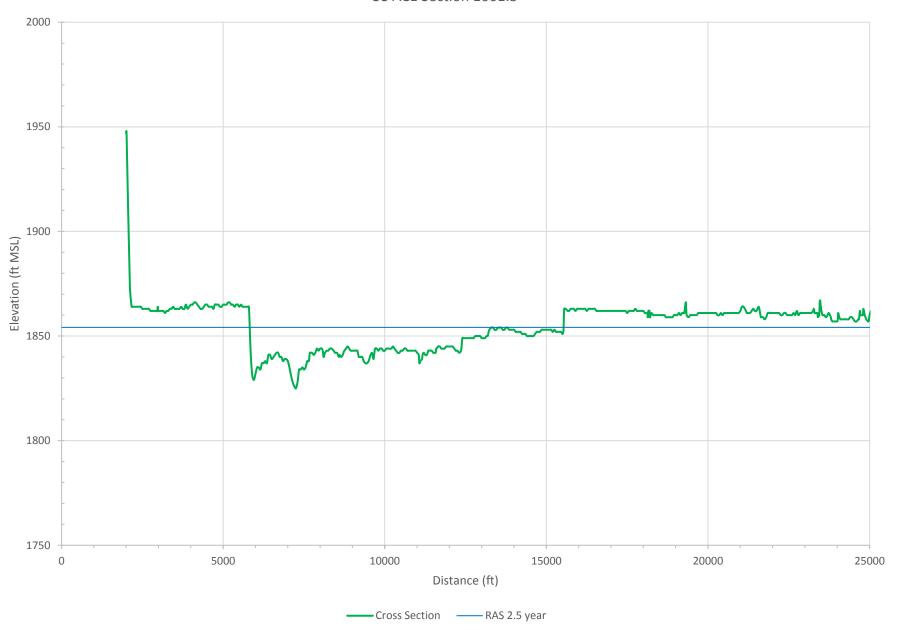


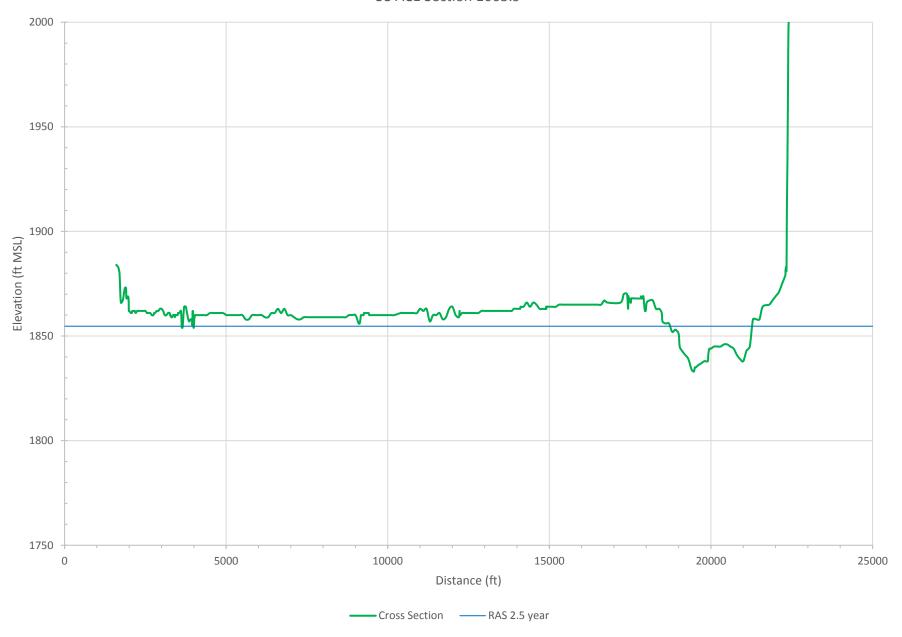


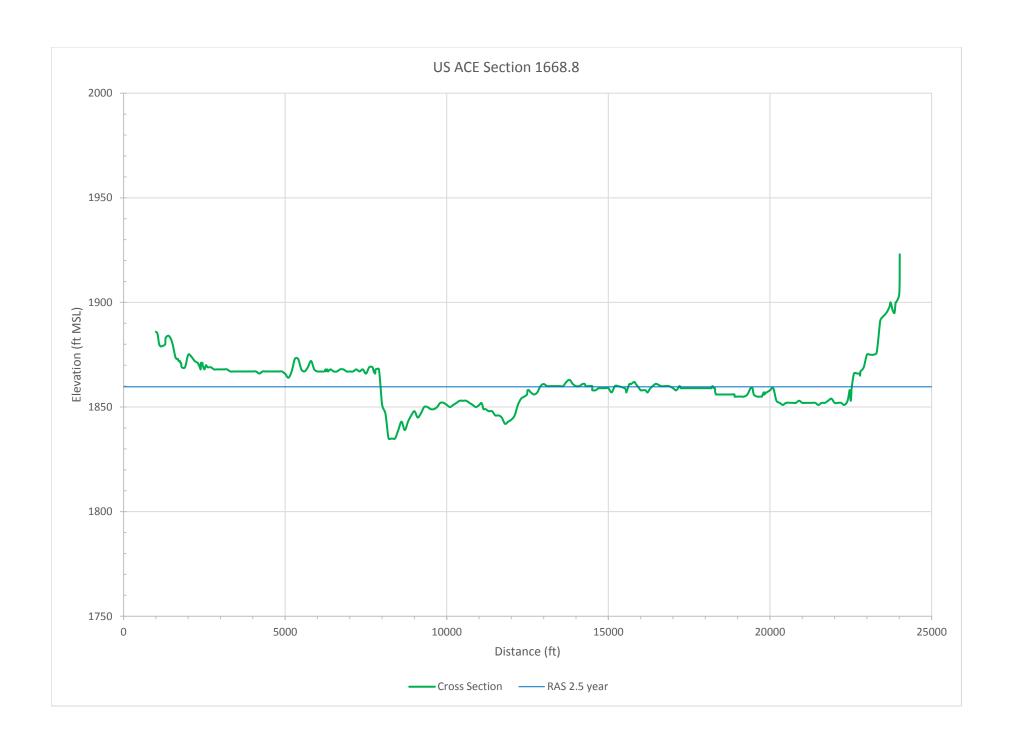


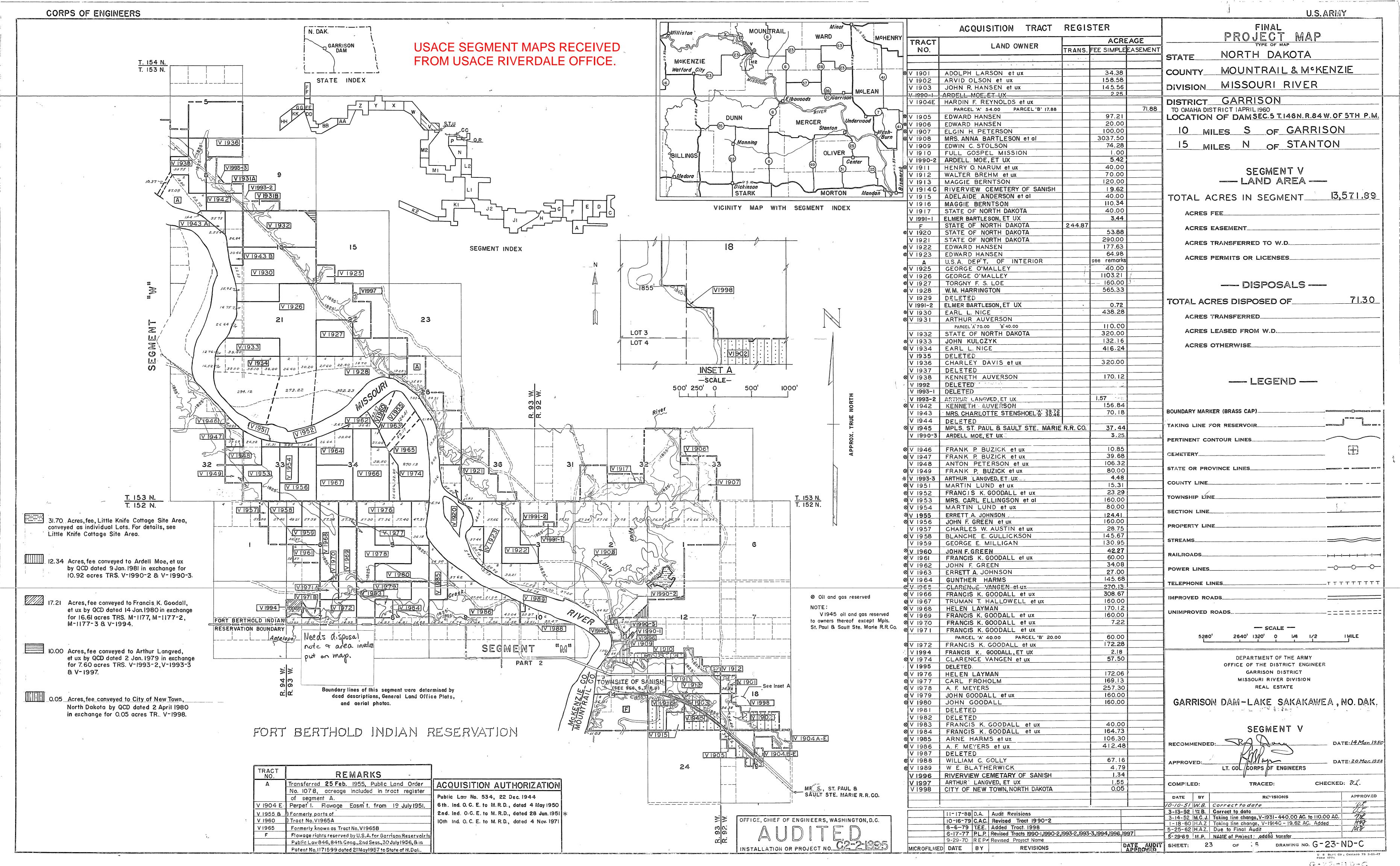


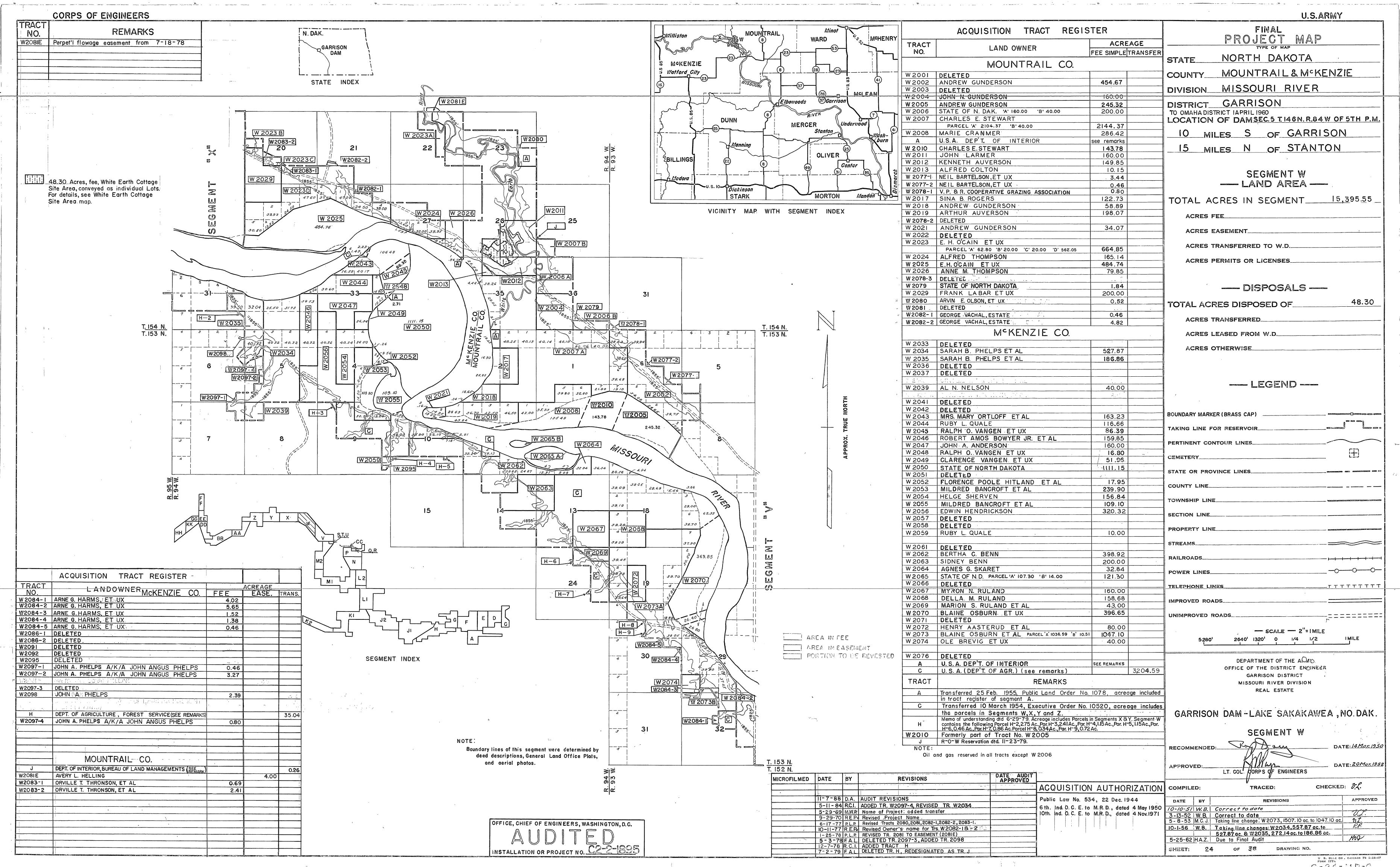




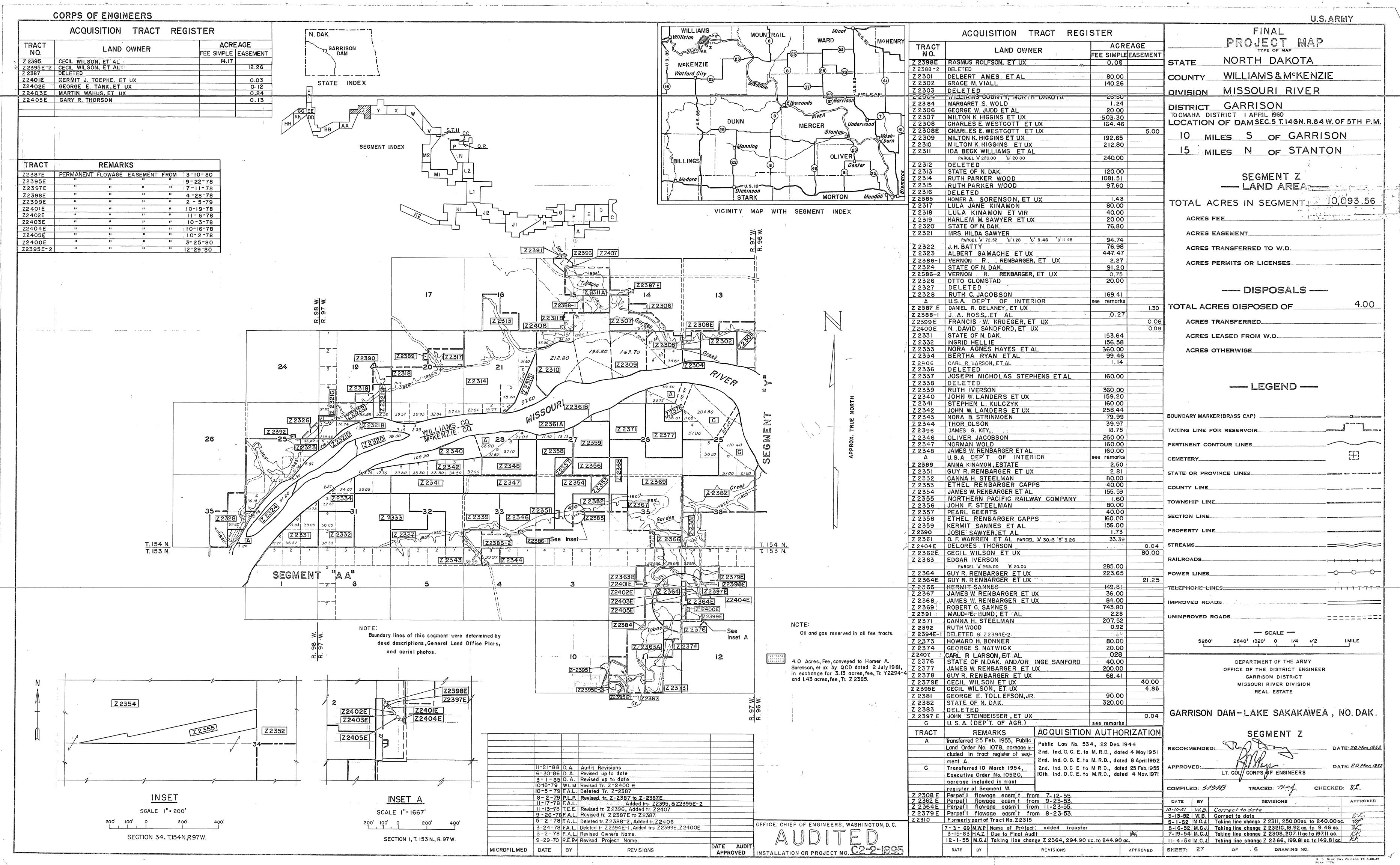


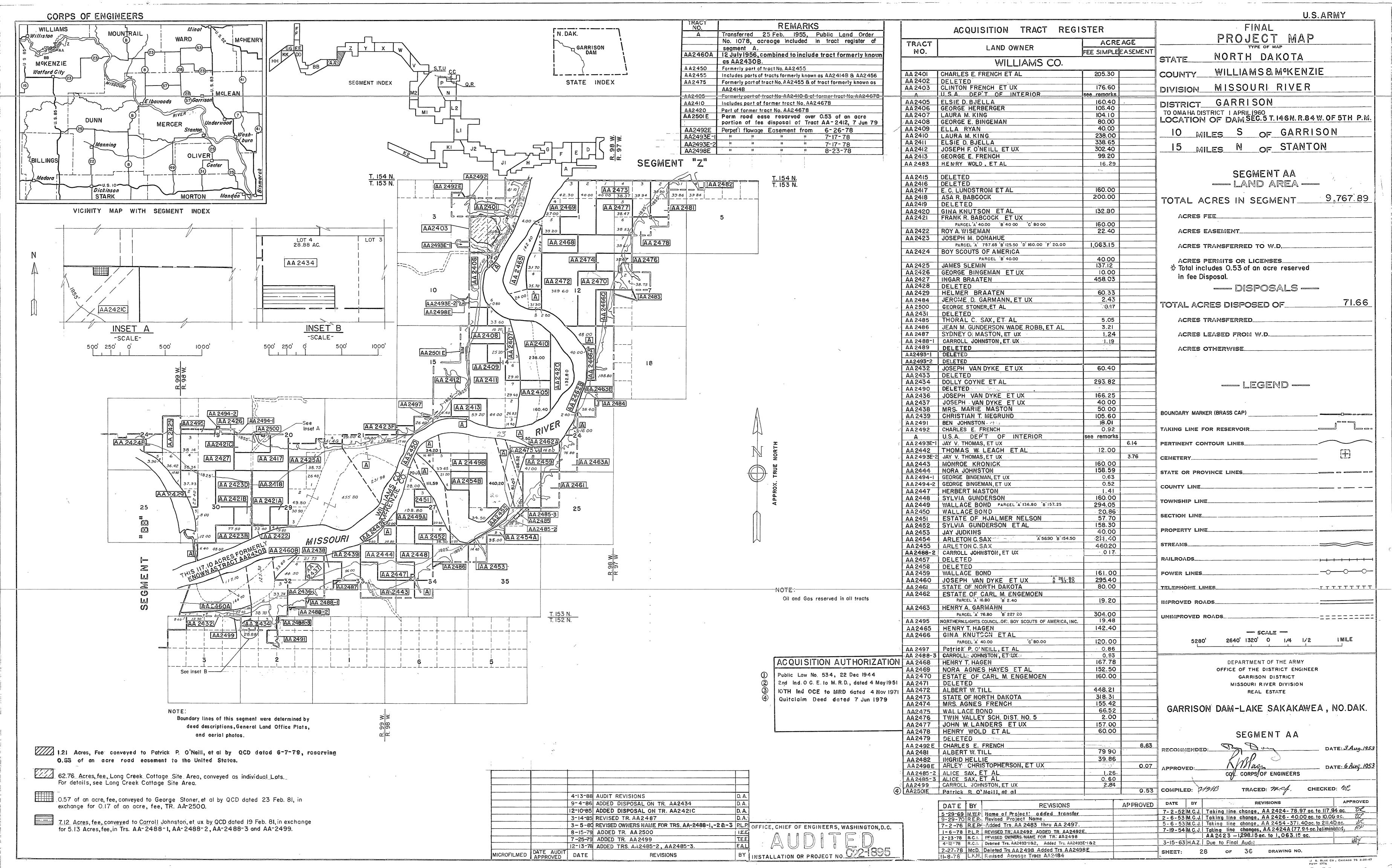


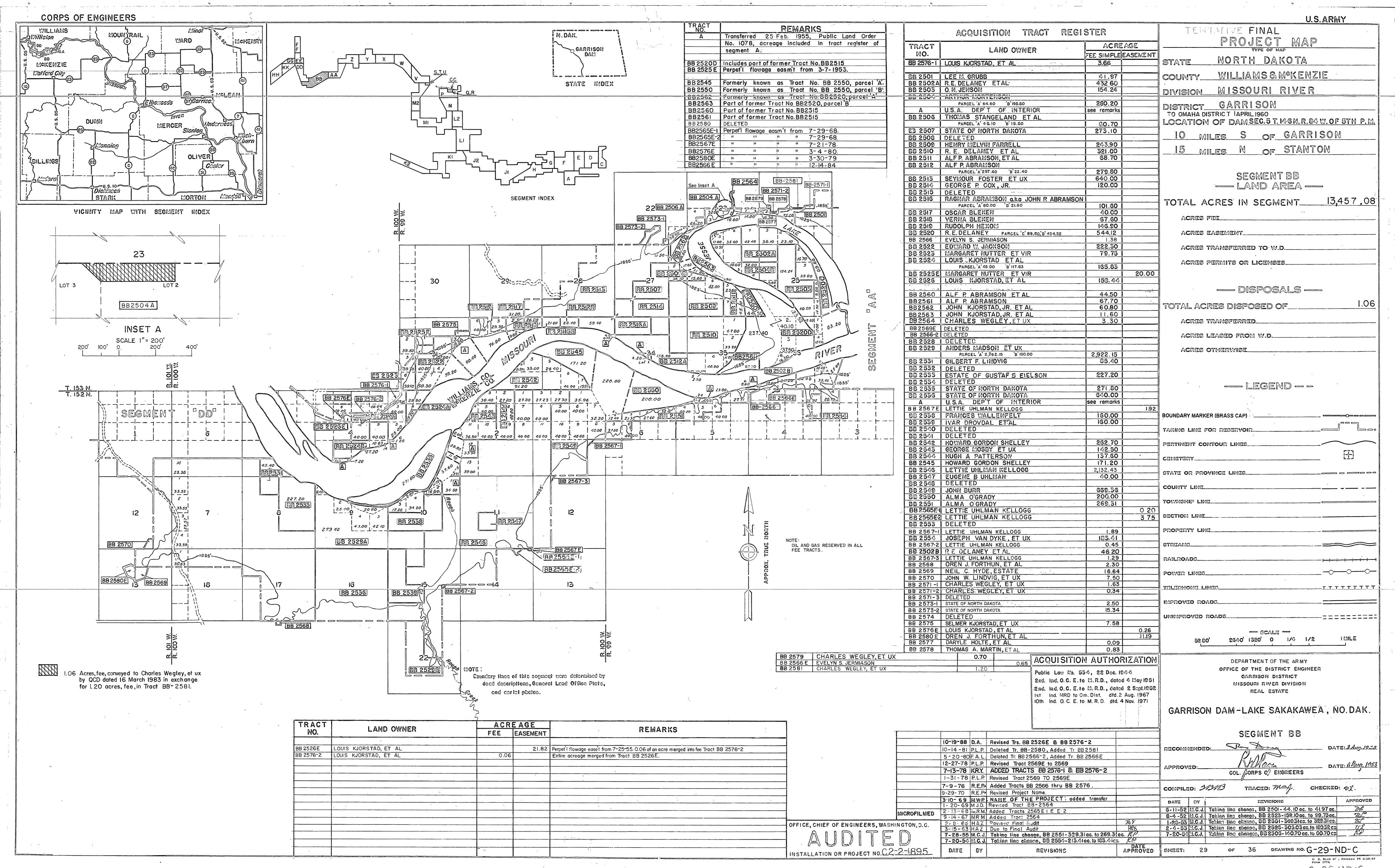


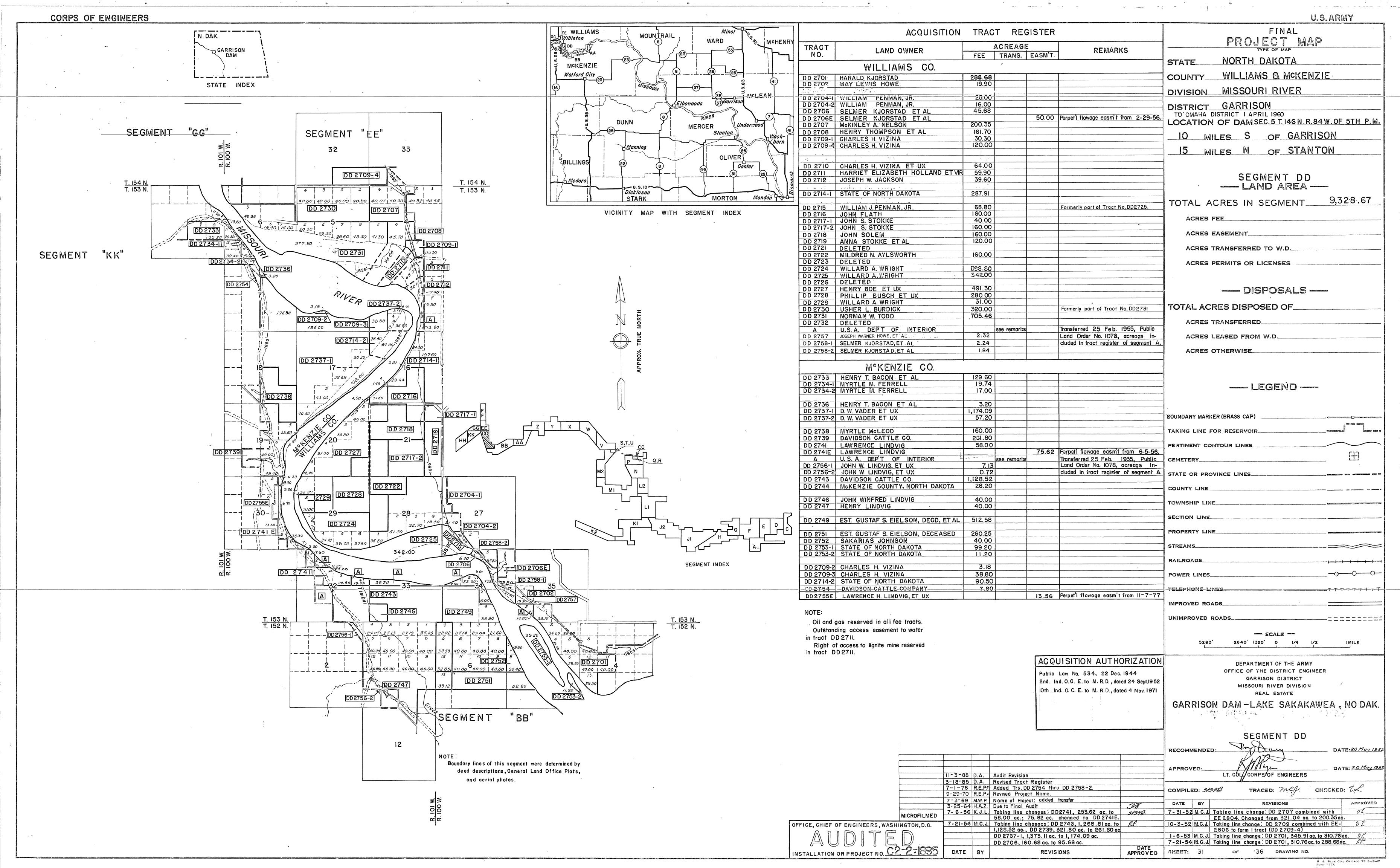


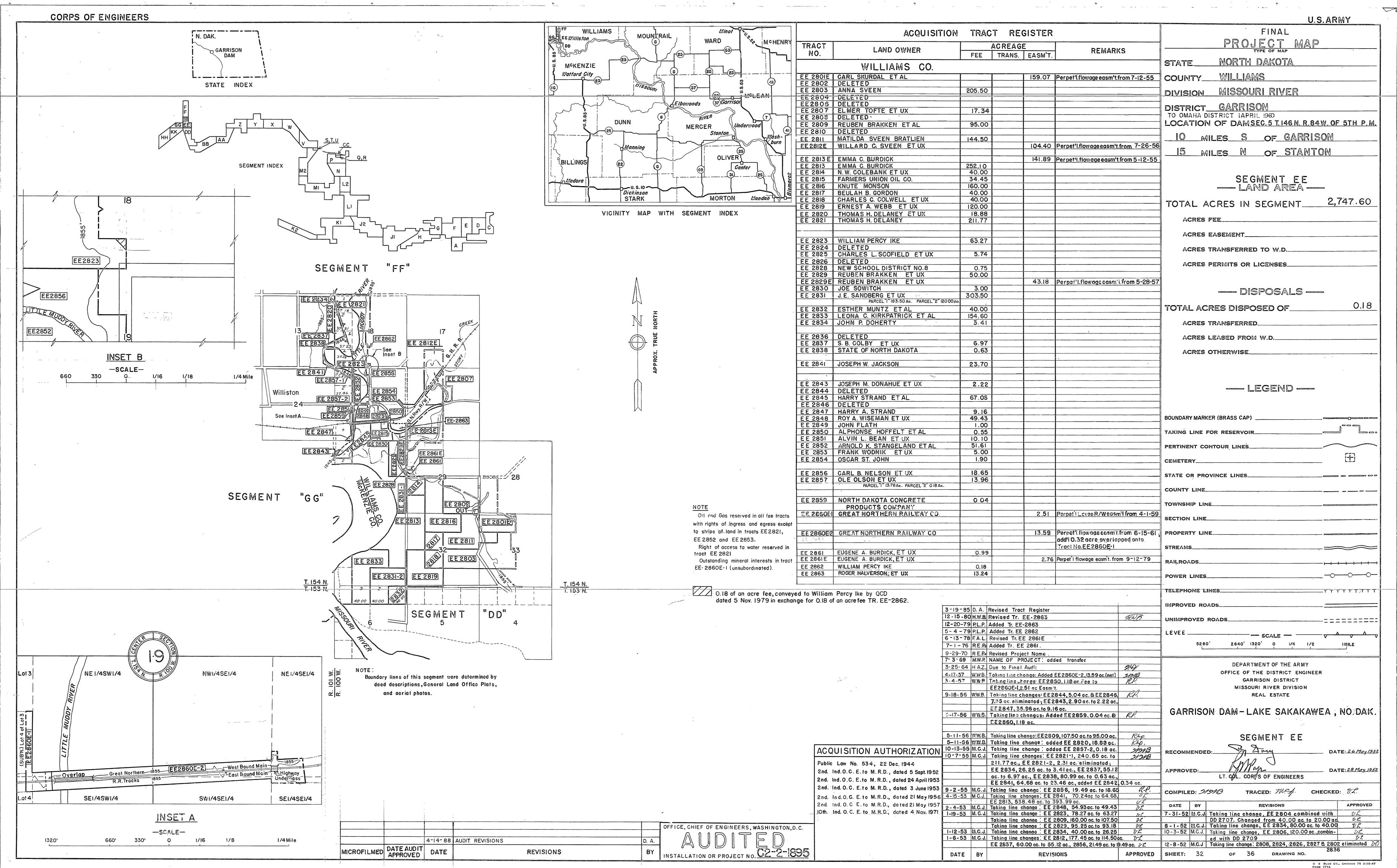
G-25-ND-C

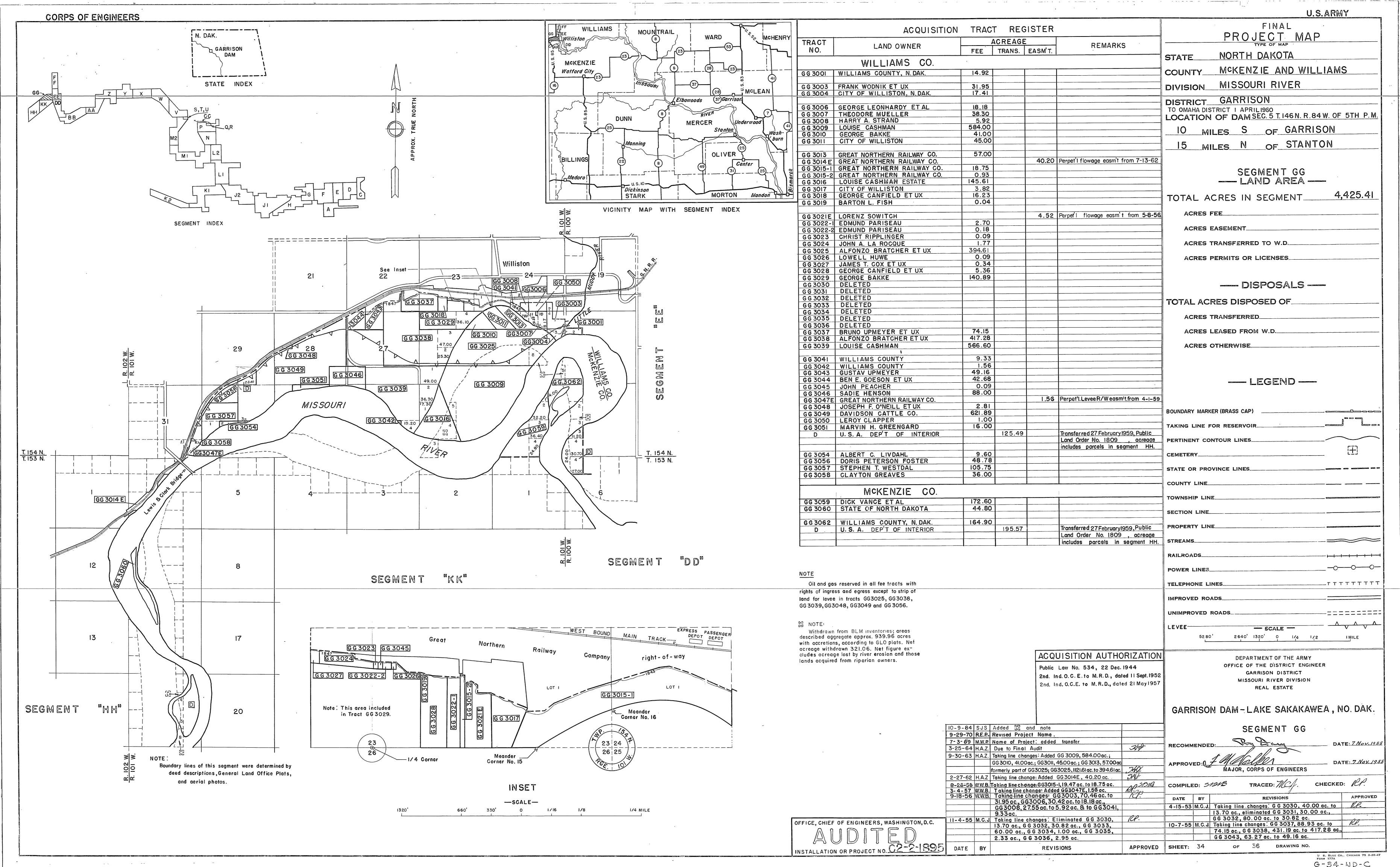












| - 15 |  |  |  |   |
|------|--|--|--|---|
| 1    | Appraisal for Tract  | al altradequations and   | etranido midas   | PROJECT Garrison Dam and  |
|      | V-1926   | R_ SED APPRAISAL   | of hour empara and to  | Reservoir, North Dakota   |
|      | 1320   | APPRAISAL REPORT   | real grain, last   | TRACT LINE END BOTT die of  |
|      |  | Sect for them, make of   | Love planes ve   | V-1926 CITY, DISTRICT, OR TOWNSHIP  |
|      | STATE Odd of the main  |  | aplands an lovel   | AGMOS DAN GHEALGA RASING G  |
| 1    | North Dakota   | Wileges evidouborg b   |  | Township 153, Rge 93 W.   |
|      | A CONTRACTOR OF THE PROPERTY O | single man to best it  | THE RESTAURANT OF STREET   |   |
| 1    | LAND DESCRIPTION   |  |  |   |
|      | Tol bestlide era abild!  |  |  | cash grains, while poorly   |
|      | quarter of the Southeas<br>River, East half $(E_2^{\frac{1}{2}})$ ,<br>the Southwest quarter<br>of the Northeast quarte<br>$(NW_2^{\frac{1}{2}}SE_2^{\frac{1}{2}})$ of Section 22  | st quarter (NE SE ) o<br>South half of the No<br>(N SW ) of Section 21<br>er (SW NE ), Northwes<br>Lots 1 and 2 of Sec             | f Section 20 lying<br>rthwest quarter (S;<br>, Northwest quarter<br>t quarter of the So<br>tion 28, all in Tov | ter (SEANEA), Northeast East of the Missouri NWA), North half of r (NWA), Southwest quarter outheast quarter whip 153 North, Range  |
|      |  |  | in crop production   | brased roter a at Juleanic  |
|      |  |  |  |   |
|      |  |  |  |   |
|      |  |  |  |   |
|      | to bottom oregismed with the nearly level brush olay subscii and 212.99 or a low soil.   | fovel vitase to serios<br>o serios 701; licedos<br>o serios and serios mao<br>o with a sandy and proposed<br>o serios do serios 63 | a consists of \$10 is and a sandy clay of and silty clay of a pland parties land floation is accept.           | CHARLETTE, TOPOSERTE AND ADAPTAS COMPTISSING 829.09 acres and grasslands with a sand acres of steeply rolling a lactuded in pasture classifications. Included in pasture classifications. |
| 8Ja  |  | Jours no   | wichuld.   | was indicated in this appraisal   |
| 1    | Entire Ownership - 3   | 787.43   |  |   |
|      |  | 829.99<br>957.44   |  | efdelieve jou   |
|      | -  |  |  |   |
| V    | AREA (Acres)<br>1(05.2)<br>829.99  | AL PRESENT MARKET VALUE  | APPRAISAL VALUATION  | VALUE OF GROWING CROPS: SEVERANCE DAMAGES \$  |
| 1    | I CERTIFY THAT I HAVE CAR  | \$ 30,000.00 Includin  |  | DATE  |
|      | AND THE AMOUNT INDICATED   |  |  | 3 Nov 1950  |
|      | THE PRESENT MARKET VALUE   |  |  | APPRAISER Revised 25Sep52   |
| 1    | OTHERWISE INDICATED. I D   |  |  | nevised 255ep52   |
| -    | INTENDED FUTURE INTEREST   | THEREIN.   |  | 11811   |
|      | 2  |  | CBV  | Mogen   |
| A    | APPROXED BY (Name and Titl   | " Outor  | doom/ Chies  | f, Appraisal Branch 3   |
| 9    | ENG FORM 241 Inv 1 +1  | 1- 1/20/53   |  | Army-CE-Omaha, Nebr.  |
|      | 1 KIHI   |  |  |   |

LOCATION, NEIGHBORHOOD, ETC. This ea is characterized by both is and small farms and by a few large ranches that include graing and bottem croplands. - me economy of the area combines the raising of cereal grain, flax and high grade beef cattle.

Lands of the area range from nearly level bottom lands of the Missouri flood plain to steeply rolling and rough uplands and level plateaus at an elevation of 175 to 250 feet above the flood plain. Soils of the flood plain vary in texture from fine sandy loams to silty clay loams of variable fertility and productive capacity. Soils of the uplands are mostly clay loams of variable texture utilized primarily for hay and pasture. The most desirable lands of the flood plain are usually utilized for alfalfa production and cash grains, while poorly drained lands, valley slopes and the uplands are utilized for feed crops, hay and grazing. Dry farming, which incorporates summer fallow practice, is most common. Yields are variable, but have been very good during the 10-year period prior to 1951. The 1951 and 1952 seasons were very dry and in general the crops were poor and improfitable. Average carrying capacity of grazing lands is about 2.5 acres per a.u. month. Farm tenancy is low and the usual rental terms are 1/4 of crop delivered to owner plus cash rental for improvements and pasture. The average annual rainfall is about 15 inches of which the major portion falls during the  $4\frac{1}{2}$  month growing season. Drought is a major hazard in crop production.

CHARACTER, TOPOGRAPHY AND ADAPTABILITY This classification embraces the portion to be acquired, comprising 929.99 acres and consists of 410 acres of nearly level bottom cropland with a sandy and silty clay soil and a sandy clay subsoil; 207 acres of nearly level brush and grasslands with a sandy and silty clay loam soil and a sandy clay subsoil and 212.99 acres of steeply rolling upland pasture lands with a sandy and gravelly clay loam soil. Included in pasture classification is about 35 acres of abandoned croplands. None of this area is fenced except the upland pasture which is fenced as part of the area remaining.

|                    |       |            | ASSESSED VALUE     |         | ps<br>ps |
|--------------------|-------|------------|--------------------|---------|----------|
| YEAR Not available | ACRES | LAND<br>\$ | IMPROVEMENTS<br>\$ | OTHER - | TOTAL \$ |

REMARKS RELATIVE TO ASSESSED VALUE

Chick, Achter al Sranch

Investigations disclosed that the assessed valuations bear no relationship to the present market value of lands in this area.

1950 Per 1950

| PRESENT USE             |          | . TYPE                             | TOPOGRAP            | WV      | ID         | REA        | HALF HALL         | TATAL            |
|-------------------------|----------|------------------------------------|---------------------|---------|------------|------------|-------------------|------------------|
|                         | Jacoba   | . 11172                            | TOPOGRAP            | nı      |            | KEA        | UNIT VALUÉ        | TOTAL VALUE      |
| roplands - bot          | tom      | Sandy and silty clay loam          | Nearly 1            | evel    | 410.       |            | 50 •00            | 20,500.00        |
| Brush and grass bot     |          |                                    | Nearly level 207.00 |         |            | 15.00      | 3,105.00          |                  |
|                         |          | loam                               |                     |         |            |            | -1.524            | J- 14.4          |
| Pasture lands - uplands |          | Sandy and<br>gravelly<br>clay loam | Steeply rolli       |         | ing 212.99 |            | 10.00             | 2,129.90         |
|                         |          |                                    |                     |         |            |            |                   |                  |
| BSAQ_TAIR 3             |          | in Letsey                          | \$600 A             | AL HAVE |            |            | E 234 X           | 6497 L           |
|                         |          |                                    |                     |         | 92         | 9.99       | TOTAL             | \$ 25,734.90     |
|                         |          | Y/                                 | ALUATION OF         | IMPROV  |            | 3.33       |                   | 20,104.50        |
| KIND                    | SIZE     | CONSTRUCTION                       | ROOF                | FOUN    | DATION     | CONDITION  | PRESENT VAL.*     | SALVAGE VALU     |
| o buildings on          | this tra | ct.                                |                     |         |            |            |                   |                  |
| o buildings on          | this tra | ct.                                |                     |         |            |            |                   |                  |
| o buildings on          | this tra | ct.                                |                     |         |            |            | ALUSANIN (I       | STRIT SO JABIAN  |
| o buildings on          | this tra | ct.                                |                     |         |            |            | ALUNDARY IN       | ESHIT NO JABIAN  |
| o buildings on          | this tra | ct.                                |                     |         |            |            | A LU NES REST. LA | RESIST NO JABIAN |
| o buildings on          | this tra | ct.                                |                     |         |            |            |                   | ESHIT NO JABIAN  |
| o buildings on          | this tra | ct.                                |                     |         | 12001)6    | Tiologi in | All results of    | ERMIT NO JABIAN  |

ENG FORM 241 (Con't) Total Valuation of 829.99 Acres Being Acquired - \$25,700.00

|                | MALE PARTY OF THE | , miles and | DEED |        | EARBY PROPER       | ACTUAL                                 | PRICE                  |
|----------------|---|-------------|------|--------|--------------------|--|------------------------|
| GRANTOR        | GRANTEE   | DATE        | BOOK | PAGE   | ACRES<br>OR AREA   | CONSIDERATION                          | PER ACRE               |
| 00.000,09      | 0.03  | 06.00       |      |        | pağ Dite i<br>Clay | tom that<br>that<br>late               | od — abdatqua          |
| 00. Cr.        | 0,81  | 00.70       |      | £ 1,50 | yand bees<br>talay | Seria - Abrel<br>2.115   tens<br>2.001 | seary than awar<br>and |
| Oe. est. 1 . q | do. or  | 10.3/1      |      | 120    | UN SERVI           | benz bezige                            | - Milited forces an    |

|           |         |                             | GROWING C     | ROPS           |                                      |                   |
|-----------|---------|-----------------------------|---------------|----------------|--------------------------------------|-------------------|
| TYPE      | ACRES   | ESTIMATED<br>YIELD PER ACRE | UNIT .        | GROSS MARKET   | COSTS TO MATURE,<br>MARVEST & MARKET | NET CASH<br>VALUE |
| 00.000,38 | Jivat   | 10.058                      | \$            | 5              | •                                    | 4                 |
|           |         | 310                         | chyberthic #1 | STALLAND.      |                                      |                   |
|           | 1932339 |                             | Guller 4      | 1001 - 8017315 | 2401                                 | OWIN              |
|           |         |                             | 1             |                |                                      |                   |
|           |         |                             |               |                | e adjust bida po                     | etbiza.           |
|           |         |                             |               |                |                                      |                   |

APPRAISAL OF TIMBER, MINERALS, ETC.

GENERAL REMARKS (Discuss principal factors affecting conclusions)

| PRESENT USE       |                    | LTYPE   | TOPOGRA    |          |             | REA       | UNIT VALUÉ   | TOTAL VALUE        |
|-------------------|--------------------|---|------------|----------|-------------|-----------|--|--------------------|
|                   | 1865               | 100   | , or our a | 1 1      |             |           | \$ 60 11   | S- Miles Son       |
|                   |                    |   |            |          |             |           | - 1-1  | 100000             |
| roplands - upland |                    | Sandy and   | Gently     |          | 536.        | .00       | 25.00  | 13,400.00          |
|                   |                    | gravelly  | rollin     | lg       |             |           |  |                    |
|                   |                    | clay loam   |            |          |             |           |  |                    |
| asture lands - up | lands              | Sandy and   | Gently     | r to     | 2421        | .44       | 10.00  | 24,214.40          |
|                   |                    | gravelly  | steepl     |          |             | THE WAL   |  |                    |
|                   | ACT NO             | clay loam   | rollin     |          |             |           |  |                    |
|                   |                    |   |            |          |             |           |  | 37614.40           |
|                   |                    |   |            |          | Te          | ss severs | nce damage   | 4300.00            |
| Tanks Br Januar   | 9 07 87<br>9 1 723 | E. 1778.  | engo s     | 03 Later | ON CONTRACT | TANIES    | 930A   | 34:7               |
|                   |                    | VAI   | LUATION OF | IMPROVE  | 2957        | 44        | TOTAL  | \$ 33,314.40       |
| KIND              | SIZE               | CONSTRUCTION  | ROOF       | FOUND    |             | CONDITION | PRESENT VAL.   | SALVAGE VALU       |
|                   |                    |   |            |          |             |           |  |                    |
|                   |                    | THE RESERVE AND ADDRESS OF THE PARTY OF THE |            |          |             |           |  |                    |
|                   |                    |   |            |          |             |           | A MYRERALA.  | EASSEL DF (THEE    |
|                   |                    |   |            |          |             |           | E MINERALE.  | ability no legical |
|                   |                    |   |            |          |             |           | A MINERAL S.   | DHIT TO JEELAN     |
|                   |                    |   |            |          |             |           | A MINERAL A  | DHITE TO JASIAN    |
|                   |                    |   | Constant   | 0.62 11  |             | .31       | A MINERAL ASSESSMENT A | LY SERENCE MAS     |

| GRANTOR            |               | S AND OFFE                  | RS OF SALE    | OF NEARBY PROPER     | T I                         |                   |
|--------------------|---------------|-----------------------------|---------------|----------------------|-----------------------------|-------------------|
|                    | GRANTEE       | DATE                        | DEED<br>BOOK  | AGE ACRES<br>OR AREA | ACTUAL<br>CONSIDERATION     | PRICE<br>PER ACRE |
| 00.00%, 51         | 25.00         | 00.556                      |               |                      | pland bankq<br>very<br>olay | r – zbaniqo       |
| 08.713,83          | 20.0          | \$5.554                     | The selection | ind final            | thost amelys -              | thre lands        |
| 02C                | mub auner     | AZON COL                    |               | oti i moi            | TAIS .                      |                   |
| PARISON OF ABOVE V | WITH PROPERTY | APPRAISED                   |               |                      |                             |                   |
|                    |               |                             |               |                      |                             |                   |
|                    |               |                             | GROWING       | CROPS                |                             |                   |
| TYPE               | ACRES         | ESTIMATED<br>TIELD PER ACRE | UNIT          | GROSS MARKET         | COSTS TO MATURE,            | NET CASH          |
| 09. 205, 33 4 .40  | L JAYOT       | 2957.44                     | \$            | \$                   | \$                          |                   |
|                    |               |                             | MOV MARKET    | NOTATION .           |                             |                   |
|                    | IA TRECING    |                             | ON OR WORK    | #00E 10 TU           | 4400 (C. 4518               | 09.00             |
|                    |               |                             |               |                      | glatremas e                 | Tide to e         |
|                    |               |                             |               |                      |                             |                   |
|                    |               |                             | P. S. S.      |                      |                             |                   |
|                    |               |                             |               |                      |                             |                   |
|                    | MINERALS, ET  | <b>:</b>                    |               |                      |                             |                   |
| RAISAL OF TIMBER,  |               |                             |               |                      |                             |                   |
| RAISAL OF TIMBER,  |               |                             |               |                      |                             |                   |
| RAISAL OF TIMBER,  |               |                             |               |                      |                             |                   |
| RAISAL OF TIMBER,  |               |                             |               |                      |                             |                   |
| RAISAL OF TIMBER,  |               |                             |               |                      |                             |                   |
| RAISAL OF TIMBER,  |               |                             |               |                      |                             |                   |
| RAISAL OF TIMBER,  |               |                             |               |                      |                             |                   |
| RAISAL OF TIMBER,  |               |                             |               |                      |                             |                   |
| RAISAL OF TIMBER,  |               |                             |               |                      |                             |                   |
|                    |               |                             |               |                      |                             |                   |
| RAISAL OF TIMBER,  |               | I factors affect            | cting conc    | (usions)             |                             |                   |
|                    |               | I factors affect            | cting conc.   | lusions)             |                             |                   |

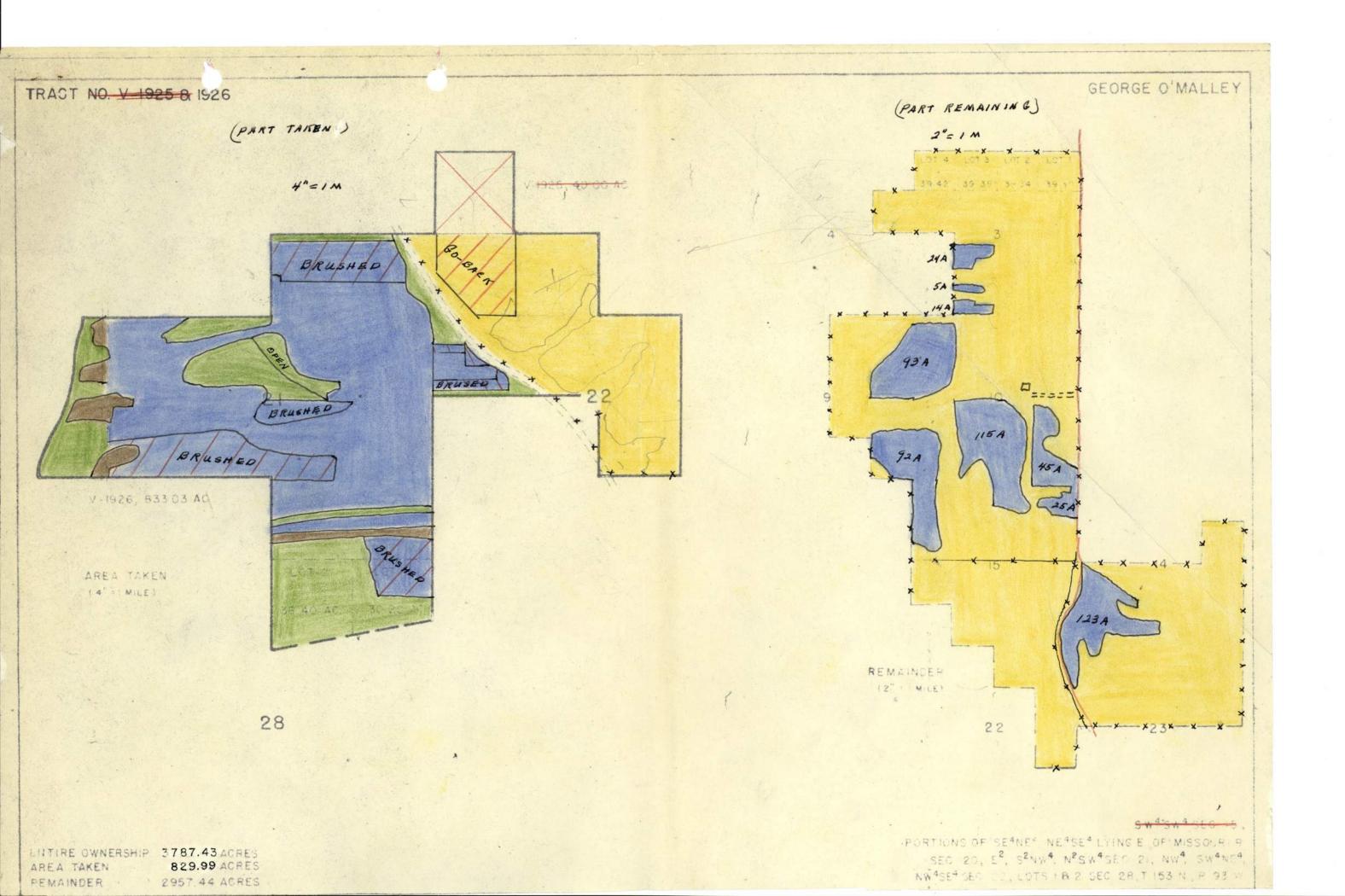
|    | Appraisal Supplement  |
|----|---|
|    | Tract No. V-1926_ Twp. Rge.   |
|    | (Tract Map Attached)  |
|    | Name of Owner (Surface) 100 0 16000 Acres 1103 2 4  |
|    | Acres which can be drilled out from onshore locations by vertical //43,  drilling methods under 40 acre spacing pattern 100 + 40  |
|    | Acres which cannot be drilled out from onshore locations by vertical drilling methods under 40 acre spacing pattern   |
|    | A. Impairment of Royalty Interest in Gas and Oil Rights:  |
| 19 | Mineral Acre Total Mineral Est. % of Total Amount Acre Value Impairment of impairment  3200 / 3200  |
| 1  | 943.71 20 188642 20 3772  |
| 15 | 40 20 800 10 -080   |
|    | Recommended Compensation for Impairment of Royalty Interest \$ 4200   |
|    | B. Impairment of Leasehold Interest in Gas and Oil Rights:  |
|    | Acres Impairment Per Acre Amount of Impairment  |
|    | \$ \$   |
|    |   |
|    |   |
|    | Recommended Compensation for Impairment of Leasehold Interest \$  |
|    | C. Total of Impairment: Royalty and Leasehold \$  |
|    | Remarks:  |
|    |   |
|    |   |
|    | D. The amounts above indicated are believed to be the impairment which results to the value of the gas and oil interests in this tract when such interests are reserved to owners and subordinated to the Government's right to flood permanently or intermittently. The amounts determined as impairment are substantiated by the best information available and by the opinions and recommendations provided by experts following study of the impairment problem. I certify that I have no present or intended future interest in this property. |
|    | Date of Valuation 13 apr 1913   |
|    | Date of Report 15 May 1916 Outo mullen  |
|    | MRG FORM 230 23 MAR 55 (Tentative)  |

|    | Appraisal Supplement  V-192 Impairment of Interest in Gas and Oil Rights  |
|----|---|
|    | Tract No. V-1926 (Tract Map Attached)   |
|    | Name of Owner (Surface) 100 Malley Acres 1103. 11 - 1/916 40,000 V-1125   |
|    | Acres which can be drilled out from enshore locations by vertical //43,24 drilling methods under 40 acre spacing pattern 160 + 40.  |
|    | Acres which cannot be drilled out from onshore locations by vertical drilling methods under 40 acre spacing pattern 943 24.   |
|    | A. Impairment of Royalty Interest in Gas and Oil Rights:  |
| q  | Mineral Acre Total Mineral Est. % of Total Amount  (Acres Value Impairment of impairment  |
| 5  | 160 20 3200 107 32000   |
| T  | 943 1 20 18864 20 3772 34   |
| 50 | 40 20 800 10 409284   |
| (  | Recommended Compensation for Impairment of Royalty Interest - + 4200  |
|    | B. Impairment of Leasehold Interest in Gas and Oil Rights:  |
|    | Acres Impairment Per Acre Amount of Impairment  |
|    |   |
|    | P   |
|    | Recommended Compensation for Impairment of Leasehold Interest \$  |
|    | C. Total of Impairment: Royalty and Leasehold \$  |
|    | Remarks:  |
|    |   |
|    |   |
|    | D. The amounts above indicated are believed to be the impairment which results to the value of the gas and oil interests in this tract when such interests are reserved to owners and subordinated to the Government's right to flood permanently or intermittently. The amounts determined as impairment are substantiated by the best information available and by the opinions and recommendations provided by experts following study of the impairment problem. I certify that I have no present or intended future interest in this property. |
|    | Date of Valuation 13 apr 193  |
|    | Date of Report 14 May 1956 Unto Appraiser   |
|    |   |

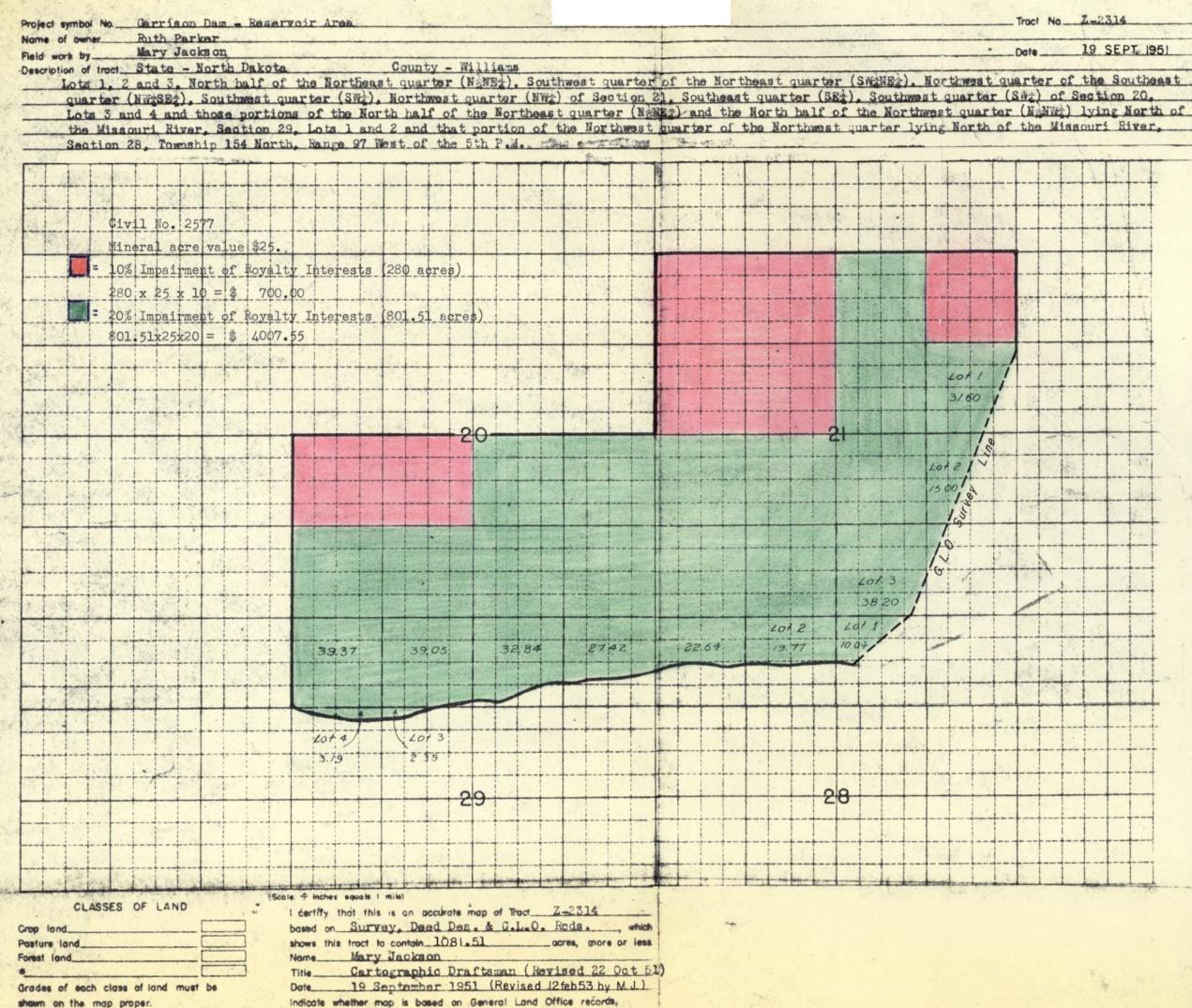
### TRACT MAP (WITH GRID)

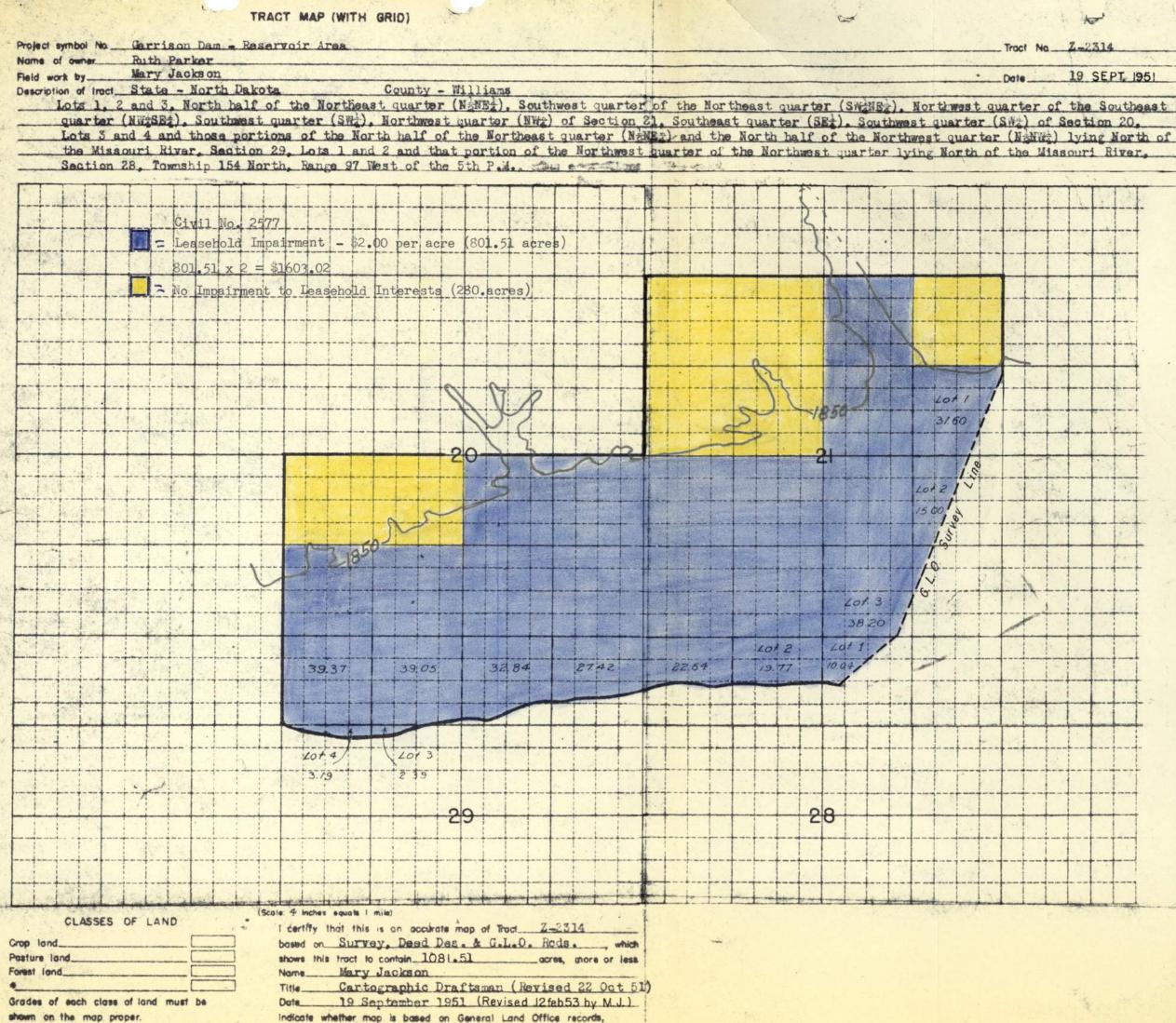


| ne     | 01   | ow    | ner_       | _ G           | 20      | re    | e C                | ME          | 116    | y      |      | -                 | -    | -          | Say.  |       | Dest  |       | יע א   | ebru          | 10.300 | - 20  | 157  |                  |       |             |      |       |
|--------|------|-------|------------|---------------|---------|-------|--------------------|-------------|--------|--------|------|-------------------|------|------------|-------|-------|-------|-------|--------|---------------|--------|-------|------|------------------|-------|-------------|------|-------|
| d      | WOR  | rk b  | y          |               | ac      | k_    | Tur                | ngi         | ist    | Dak    | 04   |                   | 4    |            |       |       | Cor   | mts   |        | Mor           | intr   | ed 1  | 127  |                  |       |             |      |       |
|        | -    | -0    | m44        | OT 8          | . 0     | 4     | the                | Se          | 2224.7 | MAR    | 4 0  | ומנוו             | eter | r of       | e th  | ie I  | ort   | het   | ist    | ous           | rte    | r     | SE-  | NE               | ) N   | ort         | hea  | st    |
|        | +00  | 439   | 20         | 4he           | 5       | ion   | the                | anet        | t as   | art    | ar   | (10               | 3-51 | (大组        | of    | Sec   | tic   | on ?  | 20.3   | vir           | 18 1   | as    | 01   |                  | 10 ]  | 1189        | our  | 1     |
| -      | 200  | 72    | 004        | he            | 74      | . (   | 四点)                | 1 5         | South  | th h   | 211  | 01                | t    | he l       | VOT   | hwe   | est.  | au    | arte   | er            | Sal    | 四元    |      | or'              | in r  | mli         | 01   | _     |
|        |      |       | Sura       | -4            | -       | 10.78 | 400                | . 13        | 1-0    | 14)    | 07   | Sei               | 2411 | nn :       | 27    | Nor   | thi   | rest  | . 01   | mri           | er     | (NV   | (全)。 | S                | nuth  | Wes         | 3 6  |       |
| 2      | + 00 | 97    | 90         | the           | 33      | ion   | the                | age         | t 01   | art    | er   | (3                | 1小0  | 验】         | No    | orth  | was   | th o  | נפנוני | cter          | 0      |       | 10   | sou!             | :hes  | 185         | qua  | r     |
| V      | ÷5   | Fa)   | of         | Se            | ct      | 10    | 2                  | 2           | Los    | 2      | BY   | d                 | 2 0  | S          | acti  | on    | 28,   | A     |        | n             | OMI    | sn.   | p.   | 27               | NOT   | TIL         | FLE  | 114   |
|        | We   | st    | of.        | the           | 15      | 七山    | Р.                 | M           |        | lus    | a    | CCC               | 6270 | ns         |       |       |       |       |        |               |        |       |      |                  |       |             |      | -     |
|        | 2    |       |            |               |         |       |                    |             |        | 5.     |      |                   |      |            |       |       |       | - W   |        |               |        |       |      |                  |       |             |      |       |
|        | 100  |       | 1          |               | T       | 1     |                    | 50          |        |        |      |                   |      |            | 201   |       |       |       |        |               |        |       |      |                  |       |             |      |       |
| 1      | -    | 13    | -          | -             |         | -     |                    |             |        |        |      |                   | 39   | 42         | 39    | 38    | 39    | 34    | 39     | 30            |        |       |      |                  |       |             |      |       |
| -      |      | -     | +-         |               | +       |       | -                  |             |        |        |      |                   |      |            |       |       |       |       |        |               |        |       |      |                  |       |             | -    |       |
| 1      |      | 18    |            |               | 1       |       |                    |             |        |        |      |                   |      |            |       |       |       |       |        |               |        |       |      |                  |       |             |      |       |
| -      |      |       |            |               |         |       | 1                  | ,           |        |        |      |                   |      | Tools.     |       |       | ,     | 1.18  |        |               |        |       |      |                  |       | 7.4         |      |       |
| 1      |      |       |            | 34            |         |       |                    |             |        |        |      |                   |      | 34         | 1     |       | ,     |       |        |               |        |       |      |                  |       |             |      |       |
| -      |      | -     | +          | -             | +       |       |                    |             |        |        |      |                   |      |            |       |       |       |       |        |               |        |       |      |                  |       |             |      |       |
|        |      |       |            | -             |         | -     |                    |             | 150    |        |      | -                 |      | -          | -     |       |       |       |        |               |        |       |      |                  |       |             |      | -     |
| 1      |      |       | 1          | 1             | 1       | -     |                    |             |        |        |      |                   |      | 6          |       |       |       |       |        |               |        |       |      |                  | S     |             |      |       |
| 1      |      |       | 18         | 1             | 1       |       | 757                |             | 237    |        | 12/4 | 1012              |      |            | 7     | L PE  | 100   |       | 123    |               | Par    |       |      |                  |       |             |      |       |
|        |      |       | 135        |               | -       |       | 18                 |             |        | 1      |      |                   |      | 20         | 境等    | dir   |       | 13.3  | 100    |               |        |       |      |                  | 100   | 1           |      |       |
| -      | -3   | 1-    | +          | +             | 1       | -     | -                  |             |        |        |      | 1                 | 37   | -          |       |       |       | 1     | 100    |               | 1      | 35    | -    |                  | 1     |             |      |       |
|        |      | -     | 14         | -             | +-      | -     |                    | -           |        |        |      |                   | -    |            |       |       | 200   | -     |        |               |        |       |      |                  |       | -           |      | -     |
|        |      | 1     |            | 1.            | 1       |       | -                  | 1           |        |        |      |                   |      |            |       | 194   |       | -     | 1      |               |        | -     |      |                  |       |             | -    | -     |
|        |      | 1     |            |               |         | 1     |                    |             | -      |        |      | 243               | 74   | 1          |       | 1     | 6     | X U   | 45     | 100           |        |       |      |                  | -     | -15         |      |       |
|        |      | 1     | 100        | 18            | 1       |       |                    |             | 7      |        |      | Page 1            | 3 8  |            | 153   | 1     | 0     |       | 300    |               |        |       |      | 1                |       | 74          | 1    | 1     |
| 1      |      | 1     | -          | 1 -           | 7       |       |                    |             | -      |        |      |                   |      |            |       |       | 14    |       |        |               |        | 1     |      |                  |       |             |      | -     |
| -      |      |       |            |               | -       |       |                    |             | -      |        |      |                   |      |            | 0     |       |       |       | -      | -             |        |       |      | -                |       |             |      | -     |
|        |      | 1     | 1          |               | 1       |       |                    |             | 100    |        | 19   | 1                 |      |            |       |       |       | 53    | 100    |               |        | -     |      | 100              | 2.    |             |      |       |
|        |      | 1     |            |               |         |       | E                  |             |        | 1 18   |      | 13                | 1111 |            |       | N. S. |       | 1     |        | 1317          |        |       | 1    |                  |       | No.         |      |       |
| Car.   |      | 1 18  | 201        |               |         |       |                    |             |        |        |      | -                 | 1    |            |       | 100   |       |       |        |               | as a   | 1 1   |      |                  | 13.00 | 0           |      | 1     |
|        |      | 1     | 1          | -             | 1       | -3    |                    |             |        |        |      | 1                 | 3.5  |            |       |       |       | -     | -      |               | -      | -     |      |                  |       |             |      | 1     |
| 7      |      |       | -          |               | -       |       |                    |             |        |        | -    |                   |      |            |       |       |       |       | -      |               | -      | -     |      | -                |       |             |      | -     |
|        |      |       | 1          |               | 1       |       | 3.8                |             | -      |        |      | -                 |      |            |       |       | 1     |       | 1      |               |        |       |      | -                |       |             |      | -     |
|        | 1    | 1     | 1          | 10            |         | -     |                    | of the same |        |        |      |                   | 8    |            |       |       |       | 10    | 1      |               |        |       | 150  |                  | 1     |             | 3.4  | -     |
| 1      | 47   | 100   | 10         | 12            | 3       |       | Patri              |             | 3      | 1      | 100  | - Car             | 19   | 3/6        |       | 1     | 5     | 100   | 15     |               | 534    | 2     | 1    |                  | -     | 120         | 1    |       |
| -      |      | -     | 1          | -             | +       |       | VE                 |             |        |        |      | 1                 |      |            |       |       |       |       |        | 1             |        |       | 1    |                  | 1     |             |      | 1     |
| 1      |      | -     | -          | -             | +       |       |                    |             |        | 1      |      |                   | -    | The second |       | 1     | -     | -     | -      | -             | -      | -     | -    |                  | -     |             | -    | -     |
| 1      |      | 1     |            | 13            | -       |       |                    |             | 1949   |        |      | -                 |      | -          | -     |       |       | -     |        |               |        | 1     | -    |                  | -     | -           |      |       |
| 1      |      | 1     | 1          |               |         | 500   |                    |             |        |        |      | 1                 |      |            |       |       |       | 115   |        | 1             |        | P     |      |                  |       |             |      | Wales |
| 1      |      | 120   |            |               | 1       |       | 4                  |             | 1      | 1      |      | 117               |      |            |       |       |       |       | 4      | (4)           | W      |       |      | 10               | 1     |             |      | 200   |
| 1      |      | 1     | 1          | -             | -       |       | -                  |             |        |        |      | 17                | 17   | 1          |       |       |       | 130   | W      | 1             |        |       |      |                  |       |             |      |       |
| F. C.  |      | 10    | -          |               | +       | 1     | -                  | 7-1/2       |        |        |      | -84               | 1    | 1          | -     | 1     |       | 2000  | -      | -4            |        |       |      |                  | -     | -           |      | 1     |
|        | _/   | 675   | 1          | 1             | -       | 5.    |                    |             |        |        |      |                   |      | 1          |       | -     |       | 9-    |        | -             |        |       | -    | -                |       |             | -    | 4     |
|        | 101  | 100   | )          | 1             | 1       |       |                    | -           | XI.    | 100    | 100  | 1                 | 1    | 1          | 11    | 3     | 3     |       |        |               | 1      | 2 %   | 48   | 10               | 2     |             |      | 1     |
| 1      | 26   | 64    | 1          | 1             |         | E.    |                    | -           | 1      |        |      |                   |      | 19         | 100   | 1     | t     |       |        |               | 1      |       | 10 A | 1                |       | Total State | 1    | Pos   |
| 20.00  | 51   | 17    | 4          | 1             | -       |       |                    | 1           |        |        |      |                   |      | 1          |       | 1     | V     | 7     |        |               | 100    | 10 TO | 360  | Silver<br>Silver | 45    |             | 1    |       |
| 95     |      | 1     |            | 11            | -       |       |                    |             | -      | -      |      | -                 |      | -          | 1     | 100   | 1     | 1     | 1      |               |        | 1     | 18   | 1                |       |             |      |       |
|        |      | 1     | -          | 4             | 1       |       |                    |             |        |        |      | -                 |      |            | -     |       |       | -     | 1      |               | 100    | 1     |      | +-               | -     |             |      | -     |
|        |      |       |            | 1             |         | - 19- | 10                 | 1           | 10     |        |      | B                 |      | 1          |       |       |       |       |        | 1             |        | 1     |      | 1 -              |       |             | 100  | 13    |
|        |      | 1     |            |               | 200     | 1     |                    |             | 140    | ¥ 2    | Le   | 11                | 180  | 1          | 1     |       | X     | 1     | 1 8    |               |        |       |      |                  | 2.0   | 1           |      | 1     |
| 1      |      | +     | 1          | 1             |         |       |                    |             | 36     | 40     | 30   | 20                |      |            | 160   |       | 100   | 1     | 100    |               |        | 196   |      | 188              |       | 1           |      | 100   |
| 3      | 100  | 1     | - 22       |               | -1      |       |                    |             | 1      | -      |      | 1                 | -    | 120        | -     |       |       | 172   | 1      |               | 77     | -     | 100  | 1                | 175   |             | 197  | 1     |
| - KANG | 12   | 1.    |            |               |         | Pizz  |                    | -           | 1      |        |      |                   |      |            | 1     | -     |       | 1     | 1 43   | 200           | -      | +     | 1    | -                | 100   | -           | 1    | 1     |
| No.    |      | 1     | 1          | 100           |         |       |                    | 1           | 8      |        |      | 130               |      | L          | 1     |       |       |       |        | Own           |        | hip   |      |                  |       | 0.6         |      | -     |
| 4000   |      | 12    |            | 1             |         |       |                    | 1           |        | 16     |      |                   |      |            | 158   |       |       |       |        | ken           |        | 187   | 160  |                  |       | 7.4         |      | 1     |
| 25.65  | 1    | 1     | 1          |               | 1       |       | THE STATE OF       | 1           | 2      | 73.2   | 2    |                   |      |            |       |       | R     | SHE   | nd     | 45            | 7      | 6.0   |      |                  | 1     |             | 2-   | 1     |
| 100    | -    | - 13  |            | -4            | 1       | 20    |                    | -           | 1      | 1      |      |                   |      | 7,         | -     |       | 1     | 1     |        |               |        |       | +    | 1                | 161   | Te          | 1    | -     |
| 1      | -    | -     |            | -             | -       |       |                    |             | 1      | 1      | +    |                   | -    | 100        | -     |       | -     | -     | 1      | -             |        |       | 123  | -                | -     | -           | +    | +     |
|        | IN.  |       |            |               | 1       | 27    |                    |             |        |        | -    | ل                 |      | 1          | 1 2   | 1     | 1     |       |        |               |        | İ     | 1    | 1                |       | 1           | -    | 1     |
| 1      |      | THE R |            |               | 1       |       | 100                |             |        |        |      |                   |      |            | 1.28  | 1     | 1     |       |        | F w           |        |       |      | 100              | 1     | 19          | 1    |       |
| 1      | -    |       | To         |               | 1       |       |                    |             | 150    |        |      | 100               |      | TE         | 1     |       |       |       |        |               | 100    |       |      | 185              |       | 1           |      |       |
| 100    | 1    | -     |            | -             |         | 100   |                    |             |        |        |      |                   | -    | +          | 1     |       | +     | 1     | 1      |               | -      |       | 1    | 1                |       | 1           | 1    | 1     |
|        | 17   | 1     | 1          |               |         |       | 253                |             |        |        |      | 1                 | -    | 1          | -     | -     | 1     | -     | -      | -             | +      | 1000  | -    | -                | -     | 1           | -    |       |
| 1      | 100  | 18    | i          |               | AL.     | SEC.  | CONTRACT OF STREET |             |        |        | 1    |                   | N    | 1          | 1     | 1     | 1     |       | 1      | 1             | 1      | 1     | 1    | 1                | 1     | 1           |      | 1     |
| 2000   |      |       | LAS        | SEC           |         | )F    | LA                 | VD.         |        |        |      | (Sec              |      |            | es eq |       |       |       |        |               |        |       |      | W                | 100/  | 100         |      |       |
| 1      |      |       |            |               |         |       | 200                |             |        | 200    | 1    | - 12              | 1 ce | rtify      | tha   | t thi | 8 15  | Do    | accu   | rate<br>De si | mop    | OF C  | L.   | 1                | lod s | 3           | 5    | wh    |
| ×.     | 3990 | land  |            | 775-255-502-2 |         | 1000  |                    |             | -      | 7 10 0 |      | 7 27              | 006  | DE DE      | nie e | med.  | to co | ontal | 2      | 110           | 3,2    | 1     |      |                  | cres  | mo          | re o | r fa  |
|        |      | and_  | 10000      | 12 C St. 1265 | N. A.S. |       |                    | 1 1/2       |        |        | j    |                   | Non  | ne         | J     | ack   | Tu    | cna   | nis    | t.            |        |       | 1    | FULL             |       |             | 23   | le:   |
| 1      |      | 100   |            | (35)          | Jin.    | 101   |                    |             |        |        | ]    | 44                |      |            |       |       |       |       |        |               | 1      | 400   | 1 AP | -                |       | A 31        | 8 32 |       |
| -      | -    | -     | V STEEL ST |               |         |       | - The second       | mus         |        | -      | -    | Acres 100 Persons | 100  |            | -     | / J   | 1000  | 2.63  | 4.6    |               | 100    |       |      |                  |       |             |      |       |



TRACT MAP (WITH GRID)





### TRACT MAP (WITH GRID)

| Project symbol No Garrison Dam - Rese   | ryoir Troct No Z-2314   |                |
|---|---|----------------|
| Name of owner Clarence H. Parker  |   |                |
| Field work by Mary Jackson  | Date 19 September 1951  |                |
| Description of tract State - North Dakot  | he Northeast quarter (NoNE), Southwest quarter of the North quarter (SW.  | INDI           |
| Northwest morter of the Souther   | st quarter (NW-SEd), Southwest quarter (SW-), Northwest quarter (NW-) of Sec  |                |
| Southeast quarter (SEA). Southwe  | st quarter (Sw) of Section 20, North half of the Northeast ster (NoNE),   |                |
| half of the Northwest quarter (N  | NW.), Lot 4 of Section 29, Lot 2, Northwest quarter of the thwest quarter   |                |
| of Section 28 in Township 154 No  | rth. Range 97 West of the 5th P.W. rlus accretions. The 1 and Southeas  | terly boundary |
| lines of said accretions being ]  | coated in accordance with an agreement filed in Book 91 of L is on page 375   | of the records |
| of Williams County, North Dakots  |   |                |
|   |   |                |
| LOT 1, SECTION 28, LOT 3, SE  | TION 29   |                |
| PLUS ACCRETIONS, TOWNSHIP   | 154 NORTH,  |                |
| 97 WEST OF THE 5 M. O.M.  |   |                |
| 7/ WEST OF THE 3-1. V. M.   |   |                |
| 1-  |   |                |
|   | tol A   |                |
|   | 3,00  |                |
|   |   |                |
| X X X X X X X X X   | 21 1 1  |                |
|   | ×0 3/3/3/3/3/3/3/3/3/3/3/3/3/3/3/3/3/3/3/   |                |
|   |   |                |
|   | 90 k  |                |
|   | 7   |                |
| 00  |   |                |
|   | TO XO TO THE TOTAL PROPERTY OF THE PARTY OF |                |
|   | TO NO DO  |                |
|   | 1 Lat 10 74.20 1  |                |
|   | La   |                |
|   | JOA P 20 VIN TO THE PERSON OF |                |
|   | A A A A A A A A A A A A A A A A A A A   | 1 1 2 3        |
| - D - UM  | Lot 2 10T 1   |                |
| 39 37 39 05 32 84   | 2708 2264 19 77 1004 240  |                |
| 1000  |   |                |
|   |   |                |
|   |   |                |
|   |   |                |
| Lot 4 LoT 3   |   |                |
| 3 19 1.39   |   |                |
|   |   |                |
|   |   |                |
| MARSH LANDS 29  | Scale: 4 inches equate 1 mile) 28   |                |
| MATECLASSES OF LAND   | I certify that this is an accurate map of Tract Z-2314  |                |
| Crop land   | based on G.L.O. Reds and Survey & Deed Desc., which   |                |
| Pasture land  | shows this tract to contain 1160-201179-11 acres, more or less  |                |
| Forest land   | Nome Hary Jackson   |                |
| #TILLABLE LAND-BRUSHED  #RASS LAND-TILLALLE  Grades of each class of land must be | Title Cartographic Draftsman  |                |
|   | Date 19 September 1951  |                |
| shown on the map proper.  | Indicate whether map is based on General Land Office records,   |                |
| * Name of any other class of land involved  | natical survey dead description or actual survey  |                |

ENG FOR 998

|                       |                       |               |        |              | 100   | TF        | RACT   | MAF     | (WIT       | TH (                     | GRID   | )  |        |           |                      |           |           |                |                     |          |         |        |                       |           |               | Ex.  |           |                        |                |        | 10    |        |       |       |      |       |
|-----------------------|-----------------------|---------------|--------|--------------|---|-----------|--------|---------|------------|--------------------------|--|--|--------|-----------|----------------------|-----------|-----------|----------------|---------------------|----------|---------|--------|-----------------------|-----------|---------------|--|-----------|------------------------|----------------|--------|-------|--------|-------|-------|------|-------|
| roject syr            | 中华国际的人民会员             |               | hrri   |              |   | Res       | ervo   | ir A    | rea        |                          |  |  |        |           | 30                   |           |           |                |                     |          |         |        | 10.                   |           |               |  | 50.45     |                        |                | Garage | 400   | _ Trac | Na_   | Z-1   | 314  |       |
| ame of<br>leid work   | by                    | 1             | ary    | Park<br>Jack | e on  |           |        |         |            |                          |  |  |        |           |                      |           |           |                |                     |          |         |        |                       |           | 12.0          |  | Kr.       | 200.00                 |                |        |       | Date   |       | 19    | SEP  | T     |
| and the second second |                       | CANCEL OF THE | den to | - 1          | method  | Dake      | ta     |         |            |                          | Col  | inty   | - 1    | Will      | iam                  | 5         | .41       |                |                     |          | - F +1  | he M   | on th                 | anat      | ana.          |  | / Quela   | gua.)                  | Nor            | th was | at o  | ue rt  | ar o  | f the | a So | ath   |
| OUS THE THE           |                       | - / N         | TIME D | ±1 (         | Sauth   | man er T  | Chia ! | mean    | 180        | Hand .                   | Nor  | ++trame  | ant.   | 77110     | Pitrar               | · (NV     | 1         | of Se          | ec ti               | on 2     | 1. 50   | ou the | aast                  | 0118.1    | rter          | (SET   | ) . So    | uthw                   | mest (         | uar    | ter   | SIL    | OI    | Sect  | won. | CU    |
| T                     | ate 9                 | bene 3        | Aa     | nd to        | asan  | nant      | 4 one  | nf      | the        | Nor                      | th h   | alf  | of     | the       | Nor                  | thes      | st        | TIBLE          | ar                  | ( ] [ ]  | E7) a   | und '  | the                   | Nort      | n hal         | I OI   | the       | Bort                   | hwes           | c au   | ar te | r (N   | 30114 | LVI   | 33.3 | BOL   |
|                       | he Mi                 | Lasou         | ri R   | iver         | Sac   | tion      | 29.    | Lot     | 3 1        | and                      | 2 8  | nd   | tha t  | DO<br>5+h | rtic                 | n of      | th        | e Nor          | the                 | est      | duari   | er i   | of t                  | he N      | orthu         | west   | quart     | ar l                   | ying           | Nor    | tho   | th     | 9 101 | BBOUT | 1 10 | (AS)  |
|                       | ACLI                  | m ze          | , 10   | WORL         | th re   | T RU      | Lilla  | AVILL   | 60 0       | 1.18                     | 28 11.   | - WA   | WE 132 | N 411     | A 80                 |           |           | \$500          | Marine and American | -        | 100     |        | er s                  | 0.00      | 1             |  | -         |                        |                |        | -     | -      |       | -     | 4    |       |
|                       |                       |               |        | 18           |   |           |        |         |            |                          |  |  |        |           |                      |           |           |                |                     |          |         | 1      |                       |           | 151           | 1  | 11        |                        |                |        |       |        |       |       |      |       |
|                       |                       |               |        |              |   |           |        |         |            |                          |  |  |        |           |                      |           |           |                |                     | DE .     |         |        |                       |           | 15            | 1  |           |                        | 1              |        |       |        |       |       | 1    |       |
|                       |                       |               |        |              | as i  | 4         |        |         |            |                          | 10%  |  |        |           | 1                    |           |           |                |                     |          |         |        |                       |           |               | 11   |           | •                      |                |        |       |        |       | 8     | 1.0  |       |
| THE                   |                       |               |        |              |   |           |        |         |            |                          |  |  |        |           |                      |           |           |                |                     |          |         |        |                       |           |               |  | N         |                        | g (a.          |        |       |        |       |       |      |       |
|                       |                       |               |        |              |   |           | 100    |         |            |                          |  |  |        |           |                      |           |           |                |                     |          |         |        |                       |           | 18            | 4  |           |                        |                |        |       |        |       | - W   |      |       |
|                       |                       | 1             |        | 1            |   |           | 17     |         |            |                          | -  |  | 1      | 1         |                      | -         | -         |                | 1                   |          |         | 1      |                       |           | 13            |  |           |                        |                |        |       |        |       |       |      |       |
|                       | -                     | ++            | - + +  |              |   | +         |        |         |            |                          |  |  | -      | -         |                      | -         |           | +              | -                   |          |         | +      |                       | -         | 1             | 1  | SET       | X                      |                |        |       |        |       |       | 1    |       |
| +-+                   | -                     |               |        |              |   |           |        |         |            | -                        |  |  | +      |           |                      |           |           | -+             |                     |          |         |        |                       |           |               |  | +         |                        | 7              |        | 100   | 7      | 18    | 50    | 1    |       |
|                       | 2                     |               | -      |              | 100   | 9 3       |        | -       |            |                          | -  |  | +      | +         |                      |           | +         | -              |                     | -        |         | 1      |                       | 6         | 1             | Total Control  |           | 4                      |                | No.    |       | 1      |       |       | 1    |       |
| 4-4                   |                       | 4             |        | -            |   | -         |        |         |            |                          | -+   | +  |        | 4-        | -19                  |           | 5         | -              |                     |          |         | +      | +                     |           | 13            |  | +++       |                        |                | Lot    |       | 1      |       |       | +    | -     |
|                       |                       | 1             |        |              |   |           |        | -       | -          |                          |  | 1  |        | A         |                      | 4         | -         |                | -                   |          | -       | 1      |                       | 9         | 1-3           | -  | A CHARLES |                        | 2000           | 3/6    |       | 1 30   |       | -     | 1    |       |
|                       |                       | 1             |        |              |   |           |        |         | 4          |                          |  |  | -      | 7         | K                    | 16        |           |                |                     |          |         |        | \$                    | 22        |               |  | -         | NAME OF TAXABLE PARTY. |                | 32.0   | 1     | -      |       | +-    | +    | -     |
|                       |                       |               |        |              |   |           |        |         |            |                          |  |  |        | 20        | 1                    | 13        |           |                | 10                  | 5        |         | 1      | Chell Herry 19        |           |               | 21   |           |                        |                |        | 1     |        |       |       | -    |       |
|                       |                       |               |        |              |   |           |        |         |            |                          |  |  |        |           |                      |           |           | 4              | 4                   |          |         |        | E annual and a second | Marie To  |               |  |           |                        |                |        | 100   |        |       | -     | 1    |       |
|                       |                       |               |        |              |   |           |        |         |            |                          |  |  |        |           |                      | 1         | Was all   |                | 40000               |          |         |        |                       |           |               |  |           |                        |                | 2/     | 7     |        |       |       |      | lor.  |
|                       |                       |               |        |              | 10 11   |           |        |         |            |                          |  | 8 2  | a      | 1         |                      |           |           |                |                     |          |         |        |                       | uste list |               |  |           |                        | 150            | 10     | 1     | 18     |       | Ry 7  |      |       |
| 1                     |                       | Ti            |        |              |   |           |        |         |            |                          | 1  | V  |        |           |                      |           |           |                |                     |          |         |        |                       |           |               |  |           |                        |                | 15     |       |        |       |       |      |       |
| 10                    |                       |               |        | F.A          |   |           |        | 7       | 15         | -                        |  |  |        |           |                      |           |           |                |                     |          |         |        | DAZDOS                |           | Signal Signal |  |           |                        | //             |        |       |        |       |       |      |       |
| 1                     |                       |               |        | H            | Production of the last of the |           |        | 2       |            | Constitution of the last | e de la companie de l | The state of the s |        |           |                      | diam'r.   | postile U |                |                     | 1000     |         |        |                       |           |               |  |           |                        | 1              |        | 12    | 200    | 10    |       |      |       |
| -                     |                       |               | -      |              |   | 856       |        |         | ALCO CO    |                          | THE PERSON NAMED IN  |  |        |           | -                    | denner of |           |                |                     |          |         |        |                       |           | -             |  | Lot       | 3                      | 1,0            | 7      |       |        |       |       |      |       |
| 1 1                   |                       | +-+           | -1-4   |              |   |           |        |         |            | 1000                     |  | eld Wat  | -      |           | CARLES OF THE SECOND |           | -         | -              | A STATE             |          | Par New | 10000  |                       |           |               |  | 38        | 20                     | 1              |        |       | -      | 1     |       |      |       |
| 1                     |                       |               |        | ¥000         | 100   | Philippin |        |         | a planting |                          |  |  |        |           |                      | 7000      |           |                | 4 100               | la se    |         | A VEIS |                       |           | 2 10          |  | 0/1       | 7                      | +              |        |       |        |       |       |      | 1     |
|                       | + - 41-1              |               |        | 4            |   | 4         |        |         |            |                          |  |  |        |           | -                    | 84        |           | 27             | 42                  | 2000     |         | 2.54   |                       |           | 77            | STREET, SQUARE,  | 04/       |                        |                |        |       |        |       |       | -    | -     |
|                       | -                     | 1-1           |        |              |   |           |        | 3       | 9.37       |                          |  | 39.0   | 19     |           | 134                  | 107       |           |                |                     |          |         |        |                       |           |               |  | 1         | -                      |                |        |       | +      |       |       |      |       |
|                       |                       |               |        |              |   |           |        |         | ļ.,        |                          |  |  |        |           |                      | 200       |           |                | =                   |          | 185     | 13     |                       |           | 4             | -  | -         | -                      | -              | Aug.   |       | +      | -     |       | +    | +     |
|                       |                       |               |        |              |   |           |        |         |            |                          | 4  |  |        | =         | *                    |           | -         | 1              |                     | -        | -       | -      |                       |           | -             |  | 4         | -                      | -              |        | -+    | +      | -     | -     | +    | -     |
| 1                     |                       |               |        |              |   |           |        |         |            |                          | +  |  |        |           | 1                    |           | 1         |                |                     |          | -       | 1      |                       |           | 100           |  |           | -+-                    |                |        |       |        | 1-1   | -     | 1000 |       |
|                       |                       |               |        |              |   | N         |        |         | +4/        |                          | - X  | 201  |        |           | 4.5                  |           |           |                |                     |          |         | 1      |                       |           | 1             |  |           |                        |                |        |       | 4-     | 1     |       |      | -     |
|                       |                       |               |        |              |   |           |        | 3       | 19         |                          |  | 2 39   |        |           |                      |           |           |                |                     |          |         |        |                       |           |               |  | 1998      |                        |                |        |       | 1      |       | 1     |      | 1     |
|                       |                       |               | 1      |              |   |           |        |         |            |                          |  |  |        | 00        | 1                    |           |           |                |                     |          |         |        |                       |           |               | 28   |           |                        |                |        |       |        |       |       |      |       |
|                       |                       | 100           | 513    |              |   |           |        |         |            |                          | 8  |  |        | 29        |                      |           |           | 7              |                     |          |         |        |                       | 18        |               | 20   |           |                        |                |        |       |        |       |       |      |       |
| +                     |                       |               | 77     |              | 779   | Top       |        | 1       |            |                          | 1  | 35   |        |           |                      |           |           | 1              | 1                   |          |         | 10     |                       |           |               |  |           | 100                    |                |        |       | 2      |       |       |      | 100   |
|                       | -                     | +             |        | +            |   | -         | Tage 1 | 1       |            |                          | 1  |  | #      |           |                      |           |           |                | 15                  |          |         |        |                       |           |               |  |           |                        | 3              | 105    |       |        |       |       | 100  |       |
| +-+                   | 1                     |               |        | 1            |   |           | -      |         |            |                          |  |  |        |           | -                    |           |           |                |                     |          |         |        |                       |           |               |  |           |                        |                |        |       |        |       |       |      |       |
| d. d                  |                       | 1             |        |              |   | , de      | Scole: | 4 Inch  | -is -gu    | ion I                    | mile)  | To Market  |        |           |                      |           | STREET IN | Marie Marie    |                     | Value of |         |        |                       |           |               | The state of the s |           | No.                    | as water and a | 1024   | -     |        |       |       | 1    | 1     |
|                       | CLASS                 | SES C         | F LA   | ND           | *   |           | 11     | certify | thát       | this                     | is 01  | n doc  | curate | map       | of T                 | loct      | 7-        | 2314           |                     |          | 100     |        |                       |           |               |  |           |                        |                |        |       |        |       |       |      |       |
| op lond_              |                       | 151           |        | -            |   | =         | bo     | sed o   | his tro    | ULV                      | ay.  | Dead   | 100    | 57        | di G.                |           |           | ds.            |                     |          |         |        | 可以                    |           |               |  | 25        | 1                      | 4/4            |        |       | 1      | 27    | ava   | nec  | 6     |
| sture lar             | CO. BOX 2001 P. 120.7 |               |        | -            | 7   | 5         |        | ome_    | M          | arv                      | Jac  | los or   | 0      | -         | - many               |           |           | FIRES          |                     | ALL S    |         |        |                       |           |               |  | -         | -31.504                |                |        |       | 11     | 6     | 10    | 100  |       |
|                       |                       |               |        |              | be  |           | TI     | tie     | C          | arte                     | ogra   | phi  | c Dr   | aft       | SMAI                 | L (Re     | vis       | ed 22<br>b53 b | 00                  | t 51     | )       |        |                       | 1         |               |  |           |                        |                |        |       |        |       |       | 3    | Tax 6 |

shown on the map proper.

& Nome of any other class of land involved

Indicate whether map is based on General Land Office records,

APPRAISAL REPORT

REVISED APPRAISAL

STATE

North Dakota

COUNTY.

Williams

PROJECT Garrison Dam and
Reservoir, North Dakota

Z-2314

CITY, DISTRICT, OR TOWNSHIP
Twp. 154 N., Rge. 97 W.

ADDRESS

Minot, North Dakota

Clarence H. Parker, husband

Lots 1, 2 and 3, North half of the Northeast quarter (N\(\frac{1}{2}\)NE\(\frac{1}{2}\), Southwest quarter of the Northeast quarter (SW\(\frac{1}{2}\)), Northwest quarter of the Southeast quarter (N\(\frac{1}{2}\)Southwest quarter (SW\(\frac{1}{2}\)), Northwest quarter (N\(\frac{1}{2}\)) of Section 21, Southeast quarter (SE\(\frac{1}{2}\)), Southwest quarter (SW\(\frac{1}{2}\)), of Section 20, North half of the Northeast quarter (N\(\frac{1}{2}\)NW\(\frac{1}{2}\)), North half of the Northwest quarter (N\(\frac{1}{2}\)NW\(\frac{1}{2}\)), Lot 4 of Section 29, Lot 2, Northwest quarter of the Northwest quarter (N\(\frac{1}{2}\)N\(\frac{1}{2}\)) of Section 28 in Township 154 North, Range 97 West of the 5th P.M., Lot 1, Section 28, Lot 3, Section 29, Township 154 North, Range 97 West of the 5th P.M.

Entire Ownership 5,401.51
Area Taken 1,081.51
Remainder 4,320.00

2/17/53 blv

AREA (Acres)

1,081.51

APPRAISAL VALUATION

TOTAL PRESENT MARKET VALUE
. \$38,000.00 Including Severance

VALUE OF GROWING CROPS: SEVERANCE

I CERTIFY THAT I HAVE CAREFULLY EXAMINED THE ABOVE DESCRIBED PREMISES AND THE AMOUNT INDICATED REPRESENTS MY BEST UNBIASED JUDGMENT AS TO THE PRESENT MARKET VALUE OF THE FEE SIMPLE TITLE THERETO, EXCEPT AS OTHERWISE INDICATED. I DO FURTHER CERTIFY THAT I HAVE NO PRESENT OR INTENDED FUTURE INTEREST THEREIN.

October 11-16, 1951

APPRAISER

APPROVED BY (Name and Title)

Lita Lundon Chief, Appraisal Branch

3/5/53

Army-CE-Omaha, Nebr.

LOCATION. NEIGHBORHOOD, ETC. See Attached Sheet CHARACTER, TOPOGRAPHY AND ADAPTABILITY See Attached Sheet ASSESSED VALUE IMPROVEMENTS \$5514.00 OTHER YEAR ACRES LAND 1179.11 \$ 5514.00 1948 REMARKS RELATIVE TO ASSESSED VALUE Investigations disclosed that the assessed valuations bear no relationship to the present price of lands in this area.

|                                      |  |                          | VALUATION                    | 23134 NT335  |        |             |                | OR ULE OF THE OWNER. |
|--------------------------------------|--|--------------------------|------------------------------|--|--------|-------------|----------------|----------------------|
| Valuation of 1,0                     |  | TYPE                     | TOPOGRA                      | PHY  |        | AREA        | UNIT VALUE     | TOTAL VALUE          |
| varuation of 1,0                     | or. or acr   | es being at              | darrea.                      |  |        |             | \$             | S AUTHADS            |
| Cropland (bottom                     |  | Havre silty              | Nearly<br>Level              |  | 1      | 112.00      | 55.00          | 6,160.00             |
| Cropland (bottom                     |  | Banks clay<br>and fine   |                              |  |        | 52.00       | 45.00          | 2,340.00             |
| Brushland (clean                     |  | sandy loam<br>Havre silt | y Nearly                     |  |        | 110.00      | 45.00          | 4,950.00             |
| Timberland (bott                     | The second secon | clay loam<br>Havre silt  | Leve                         | SPECIAL NAME OF THE PARTY OF TH |        | 173.00      | 30.00          | 5,190.00             |
| Timberland (bott                     |  | clay loam<br>Banks clay  | Leve                         | B. C. St. Phys. Lett. B 19, 121  |        | 94.40       | 20.00          | 1,888.00             |
|                                      |  | and fine<br>sandy loam   | Leve                         |  |        |             | 37079 37,91.2  |                      |
| Hayland (tillab)                     | Le bottom)   |                          | y Nearly                     |  |        | 30.00       | 45.00          | 1,350.00             |
| Marshland and sl<br>Pasture (upland) | Loughs   | Heavy clay<br>Bainville  | Nearly I                     | Level  |        | 180.00      | 5.00           | 900.00               |
| ( apassia)                           |  | clay loam                | rolling roughly              | de la companya della companya della companya de la companya della  |        |             |                | 2,,000,00            |
| 463 716                              |  | S T STENEX               | broken                       | Tier   |        | ITABITZ?    | 1370           |                      |
|                                      |  |                          | 1                            |  | 1,     | 081.51      | TOTAL          | \$ 24,758.66         |
|                                      |  | V                        | ALUATION OF                  | IMPROV   | EMENTS |             |                |                      |
| KIND                                 | SIZE   | CONSTRUCTION             | ROOF                         |  | DATION | CONDITION   | PRESENT VAL.   | SALVAGE VALUE        |
| Cattle Shed                          | 56x100x9   | Frame                    | Straw                        | Non  | ie     | Fair        | \$ 1,500.00    | \$ 150.00            |
| Cattle Shed                          | 16x48x7  | Frame                    | & Poles<br>C.Shgl.           | Non  | ie     | Poor        | 300.00         | 25.00                |
| Horse Barn<br>Shed                   | 18x27x7<br>10x14x6/  | Frame                    | & metal<br>Board<br>R.Roofin | Non  |        | Poor Poor   | 75.00<br>50.00 |                      |
| Addition                             | 10x16x8  | Frame                    | 11                           | "  |        | "           | 50.00          |                      |
| House (log)<br>Lean                  | 13x22x8<br>11x22x6/  | Log<br>SFrame            | C.Shgl.                      | ) Non  | le     | V. Poor     | None           | None V               |
| Garage                               | Dug-out  |                          | Straw                        | Non  | le     | V.Poor      | None           | None Nº              |
| House (cook)                         | 9x20x6   | Frame                    | R.Roofir                     | ng Non   | 10     | Good        | 300.00         | 100.00               |
|                                      |  |                          |                              |  |        |             |                |                      |
|                                      |  |                          |                              |  |        |             |                |                      |
|                                      |  | 8 A                      |                              |  |        |             |                |                      |
|                                      |  |                          |                              |  |        |             |                |                      |
|                                      |  |                          | Tanasans                     | inia An  |        | 104007 198  | anish aspect   | o straight lander    |
|                                      |  |                          |                              |  |        |             | <u> </u>       |                      |
|                                      |  |                          |                              |  |        | TOTAL*      | \$ 2,225.00    | s 300.00             |
| · Betimated contribut                | ion improves   | enta to appra            | sed market                   | value  | of the | property as | a whole.       |                      |

| SULKY THEOL       |        | 1 1 1 1 1 1 | ES AND OFF                  |                   | E OF HEARBY  | 2011 E       | 1  | U 1830 M. C.      |
|-------------------|--------|-------------|-----------------------------|-------------------|--|--------------|--|-------------------|
| GRANTOR           |        | GRAN        | TEE DATE                    | BOOK              | PAGE OR A  | REA CO       | ACTUAL<br>ISIDERATION  | PRICE<br>PER ACRE |
| 00.001.0          |        |             | 61.511                      |                   | 100  | Tin (tve     | (=   |                   |
| 00:00E,S          |        | .74         | 0 .30                       |                   | The second secon | col lais     | THE RESERVE OF THE PARTY OF THE |                   |
|                   |        |             |                             |                   | 2×6-   | eqi aca      |  |                   |
| 00.088,85         |        |             | .00                         |                   |  | 0            | 201100   | ofolia dinas      |
|                   |        |             |                             |                   | ava  | as of Posts  |  |                   |
| 5,196,00          |        | •           | O.TL                        |                   |  | ita pavel    | (1703)   |                   |
| OMPARISON OF ABO  | VE WIT | TH PROPER   | TY APPRAISED                |                   |  |              |  |                   |
|                   |        |             |                             |                   | evely.   |              |  |                   |
| 2,550.00          |        |             | 09,0;                       |                   |  |              | the bed side   |                   |
| 09.00             |        | .62         | 00.001                      |                   |  |              |  |                   |
| 1,300,60          |        |             | 41.00                       |                   |  | addignies    |  |                   |
|                   |        |             |                             | GROWIN            | CROPS  |              |  |                   |
| TYPE              |        | ACRES       | ESTIMATED<br>YIELD PER ACRE | UNIT              | GROSS MA   |              | STS TO MATURE,   |                   |
| do.001.494        |        | LINTER      | 1,004,91                    | \$                | \$   | \$           | ANY EST & MARKET   |                   |
|                   |        |             |                             | NA CHENT          | TO ROSTADIAY   |              |  |                   |
|                   |        | THISBURY    | RO TIGHES NO                | The second second | and the second s | CONSTRUCTION |  | 0.413             |
| 150.00            | po.    | 1,50        | 2127                        | photo             | MUTUR  | Trans        | 5 -001×35  | bezil eltys       |
| 00.25             | 60,0   |             | Fonz                        | me a              |  | - odara      |  | both elisa        |
|                   |        |             | 1003                        | S CON             | Lagera .   | F28809       |  | mus savo          |
| 00.01             |        |             | 1007                        | peroli a          | ritook.  |              | 102142   | Je del            |
|                   |        |             |                             | 0                 |  |              |  | an bihbh          |
| APPRAISAL OF TIME | DER, M | INERALS,    | ETC                         | едой (            | - L 18.5   | 704          | Product Co.  | (gol) sawe        |
|                   |        |             |                             | 1                 |  |              | OMESSIA  |                   |
|                   |        |             | 2005.7                      |                   |  |              | 1.00-2.00 T  |                   |
| 00.001            | loc.   | Car         |                             |                   | #270 no . 16   |              |  | (steen) anua      |
|                   |        |             |                             |                   |  |              |  |                   |
|                   |        |             |                             |                   |  |              |  |                   |
|                   |        |             |                             |                   |  |              |  |                   |
|                   |        |             |                             |                   |  |              |  |                   |
|                   |        |             |                             |                   |  |              |  |                   |
|                   |        |             |                             |                   |  |              |  |                   |
|                   | Diecu  | se princ    | pal factors affe            | ecting con        | clusions)  |              |  |                   |
| GENERAL REMARKS   |        |             |                             |                   |  |              |  |                   |
| GENERAL REMARKS   |        |             |                             |                   |  |              |  |                   |
| GENERAL REMARKS   |        |             |                             |                   |  |              |  |                   |

| PRESENT USE  |  | E EEEE   | VALUATION  |  | THE STATE OF   |                 |              |
|--|--|--|--|--|----------------|-----------------|--------------|
|  |  | TYPE   | TOPOGRA  | CONTRACTOR OF THE PARTY OF THE  | AREA           | UNIT VALUE      | TOTAL VALUE  |
| Valuation of ent   |  |  |  |  |                | \$              | \$ ( 700 00  |
| Cropland (upland   | .)   | Silty Clay   |  |  | .80.00         | 35.00           | 6,300.00     |
|  |  | Loam   | Rolli  |  | 13.00          | FF 00           | 6,160.00     |
| Cropland (bottom   | 1)   | Havre Silt   | 1  |  | .12.00         | 55.00           | 0,100.00     |
| /  | ,  | Clay Loam  | Level  |  | 52.00          | 45.00           | 2,340.00     |
| Cropland (bottom   | 1)   | Banks clay   | Nearly<br>Level  | THE RESERVE OF THE PERSON NAMED IN COLUMN TWO  | 52.00          | 45.00           | 2,540.00     |
|  |  | and fine   |  |  | A COLUMN       |                 |              |
| D  | 3 hattam   | sandy loam   |  | 1  | 10.00          | 45.00           | - 4,950.00   |
| Brushland(cleare   | d portom,  | clay loam  | Level  | AND RESIDENCE OF THE PARTY OF T | .10.00         | 47.00           | - 4,550.00   |
| m: 1 -1 -1 /h-44   | 1  | Havre silt   | The state of the state of  |  | 73.00          | 30.00           | 5,190.00     |
| Timberland (bott   | Om)  | Clay loam  | Level  |  | .15.00         | 50.00           | 9,190.00     |
| Timberland (bott   | om)  | Banks clay   | Control of the contro | MALE AND ADDRESS OF THE PARTY O | 94.40          | 20.00           | 1,888.00     |
| Timberland (bott   | Omy  | & fine   | Level  |  | ,              | 20.00           | 2,000,00     |
|  |  | sandy loam   | The state of the s |  |                |                 |              |
| Hayland (tillabl   | a hottom   |  |  |  | 30.00          | 45.00           | 1,350.00     |
| Hay rand ( 01 11 12 01   | , moo cou  | clay loam  | Level  |  | ,0.00          | 17.00           | 2,,,,,,,,,,  |
| Marsh land & slo   | noha   | Heavy clay   | The same of the sa |  | 80.00          | 5.00            | 900.00       |
| rarsh land & SIO   | agus   | Heavy Clay   | Level  |  |                | ,.00            | ,00.00       |
| Grazing Land (up   | Jana)  | Clay Loam  |  | Rolling 4,1  | 40-00          | 12.50           | 51,750.00    |
| Grazing land (up   | CONTRACTOR OF THE PARTY OF THE  |  |  | Rolling 3  |                | 6.00            | 1,980.66     |
| Grazing Land (up   | Land)  | Clay loam  | CONTRACTOR OF THE PARTY OF THE  | CONCRETE OF THE PARTY OF THE PA | ATA WILLIAM    | 3.00            | 2,500.00     |
| 1944Y 1 1 7A   | SALESTY STAND  | Olay loam  | broken   | 752573 4 37726   | W. 898-011(Y.  |                 |              |
|  |  |  | DIOROII  | 5,4  | 101.51         | TOTAL           | \$ 82,808.66 |
|  |  | v  | ALHATION OF  | IMPROVEMENTS   |                |                 | •            |
| KIND   | SIZE   | CONSTRUCTION   |  | FOUNDATION   | CONDITION      | PRESENT VAL.    | SALVAGE VALU |
| House  | 28-70-8  | Frame  | C.Shgl.  | Concrete   | Good )         | \$ 5,000.00     | \$           |
|  | 28x30x8  | Frame  | U.Shgr.  | OUICLACA   | 11             | 5,000.00        |              |
| Addition(Porch   |  | Frame  | 11   | 11   | " {            | 200             |              |
| Addition(Porch   | 36x64x14   |  | C Shal   | 11   | " ")           | 8,000.00        |              |
|  | 16x64x8/1  |  | O. OHET.   |  | 1              | 0,000.00        |              |
|  | 16x64x8/1  | BUTTE TRANSPORTER CONT. CONT. C.   | 11   |  | 1              |                 |              |
|  | 31x56x8  |  | R.Roofin   | g None   | Fair           | 1,000.00        |              |
|  | 18x38x7  | The state of the s | C.Shgl.  | None   | Fair           | 600.00          |              |
| Bunk House   | 16x18x8  |  | C.Shgl.  | Concrete   | Good           | 500.00          |              |
|  | 14x14x7  | Frame  | C.Shgl.  | Concrete   | Good           | 300.00          |              |
| Storage House  | 14x14x7  | Log  | C.Shgl.  | None   | Poor           | 100.00          |              |
| Steel grain bin  | The transfer of the Contract of the  |  | v. v. 15.  | None   | Good           | 150.00          |              |
|  | The State of the S |  |  | None   | Good           | 250.00          |              |
| Steel amain him  | E-OUU DU   |  |  |  |                |                 |              |
|  |  | Frame  | Poles &  | None   |                | 1-500-00        |              |
| Steel grain bin<br>Cattle Shed   | 56x100x9   | Frame  | Poles &  | None   | Fair           | 1,500.00        |              |
| Cattle Shed  | 56x100x9   |  | Straw  |  | Fair           | A see a see     |              |
| TO SECURE OF THE PARTY OF THE P |  |  | Straw<br>Shgl. &   | None   |                | 300.00          |              |
| Cattle Shed  | 56x100x9   | Frame  | Straw<br>Shgl. &<br>Metal  | None   | Fair           | 300.00          |              |
| Cattle Shed Cattle Shed Horse Barn   | 56x100x9<br>16x48x7<br>18x27x7   | Frame<br>Frame   | Straw<br>Shgl. &<br>Metal<br>Board   | None<br>None   | Poor Poor      | 300.00<br>75.00 |              |
| Cattle Shed Cattle Shed Horse Barn Shed  | 56x100x9<br>16x48x7<br>18x27x7<br>10x14x48   | Frame<br>Frame<br>Frame  | Straw<br>Shgl. &<br>Metal  | None<br>None<br>None   | Fair           | 300.00          |              |
| Cattle Shed Cattle Shed Horse Barn Shed Addition   | 56x100x9<br>16x48x7<br>18x27x7<br>10x14x48<br>10x16x8  | Frame<br>Frame<br>Frame  | Straw<br>Shgl. &<br>Metal<br>Board<br>R.Roofin   | None<br>None<br>None   | Poor Poor Poor | 75.00<br>50.00  |              |
| Cattle Shed Cattle Shed Horse Barn Shed  | 56x100x9<br>16x48x7<br>18x27x7<br>10x14x48   | Frame<br>Frame<br>Frame  | Straw<br>Shgl. &<br>Metal<br>Board<br>R.Roofin   | None<br>None<br>None   | Poor Poor      | 300.00<br>75.00 |              |
| Cattle Shed Cattle Shed Horse Barn Shed Addition   | 56x100x9<br>16x48x7<br>18x27x7<br>10x14x48<br>10x16x8  | Frame<br>Frame<br>Frame  | Straw<br>Shgl. &<br>Metal<br>Board<br>R.Roofin   | None<br>None<br>None   | Poor Poor Poor | 75.00<br>50.00  |              |
| Cattle Shed Cattle Shed Horse Barn Shed Addition   | 56x100x9<br>16x48x7<br>18x27x7<br>10x14x48<br>10x16x8  | Frame<br>Frame<br>Frame  | Straw<br>Shgl. &<br>Metal<br>Board<br>R.Roofin   | None<br>None<br>None   | Poor Poor Poor | 75.00<br>50.00  |              |
| Cattle Shed Cattle Shed Horse Barn Shed Addition   | 56x100x9<br>16x48x7<br>18x27x7<br>10x14x48<br>10x16x8  | Frame<br>Frame<br>Frame  | Straw<br>Shgl. &<br>Metal<br>Board<br>R.Roofin   | None<br>None<br>None   | Poor Poor Poor | 75.00<br>50.00  |              |
| Cattle Shed Cattle Shed Horse Barn Shed Addition   | 56x100x9<br>16x48x7<br>18x27x7<br>10x14x48<br>10x16x8  | Frame<br>Frame<br>Frame  | Straw<br>Shgl. &<br>Metal<br>Board<br>R.Roofin   | None<br>None<br>None   | Poor Poor Poor | 75.00<br>50.00  |              |

ENG FORM 241 (Con't) Total value of land and improvements - \$101,000.00 Entire Ownership

| AUGUST DATES      | 10.14  | F TIED   | ES AND UTT       |           | LE OF NEA             |                  | (C) (C)      | 1  | THE COURT OF               |
|-------------------|--------|----------|------------------|-----------|-----------------------|------------------|--------------|--|----------------------------|
| GRANTOR           |        | GRANT    | TEE QATE         | BOOK-     | PAGE -                | ACRES<br>OR AREA |              | TUAL   | PRICE PER ACRE             |
|                   |        |          |                  |           | The same              |                  | ou.          | 1  |                            |
| 00.001.0          | 00     |          | 0.814            |           | TO THE REAL PROPERTY. | 4027 5           | The state of | 1000   |                            |
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| OMPARISON OF ABO  | AE MIL | H PROPER | TY APPRAISED     |           | Lavad                 |                  |              | (more en   |                            |
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|                   |        |          | 44.0             | GROWII    | G CROPS               |                  |              |  | MANIAN CHANGE              |
| TYPE              |        | ACRES    | YIELD PER ACRE   | VALU      |                       | VALUE            |              | ST & MARKET  | NET CASH<br>VALUE          |
| - 00, 0, 0 2      |        | JAYOT.   | F. 18.100 &      | \$        | 5                     |                  | \$           |  | . 3                        |
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|                   | 0.     |          |                  |           |                       | Legit a          |              |  | 117.00                     |
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|                   | 00.0   |          | TANK TO SERVICE  | дой       | 1000                  | . 95             |              | The Court of the C | bell elected               |
| APPRAISAL OF TIME |        | MEDAI O  | ETC              | The same  | An E                  |                  |              | 100000000000000000000000000000000000000  | THE TANK                   |
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|                   | 10.0   |          |                  |           |                       |                  |              |  | i nime Loop<br>Loine Lo.   |
|                   | 96.0   |          |                  |           |                       |                  |              |  |                            |
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| ACMERAL OF VICTOR |        |          |                  | -41-4     | as In a I a           | ,                |              |  |                            |
| GENERAL REMARKS ( | Diecui | e princi | pel factors affe | cting co  | nc 1de 1one           | ALAG             |              |  |                            |
|                   |        |          |                  |           |                       |                  |              |  |                            |
|                   |        |          |                  |           |                       |                  |              |  |                            |

| PRESENT USE   |  | TYPE                     | VALUATION                    |  |                 | REA CO                       | UNIT VALUÉ                 | TOTAL VALUE   |
|---|--|--------------------------|------------------------------|--|-----------------|------------------------------|----------------------------|---------------|
| Valuation of 4,3                                      | 25-17-120                                  | COLUMN TO SERVICE STREET | TOPOGRA                      | orn t  | 37              | INEA (32)                    | S S                        | S TOTAL VALUE |
| Cropland (upland                                      |  | Silty clay               | Gently<br>Rolli              | ng   | 180             | 0.00                         | 30.00                      | 5,400.00      |
| Grazing (upland)                                      |  | Clay Loam                | Gently<br>Steeply<br>Rolling | 7  | 14,114          | 0.00                         | 10.00                      | 41,400.00     |
|   |  |                          |                              |  |                 |                              | 194704 KYNU 9              |               |
|   |  |                          |                              |  |                 |                              |                            |               |
| HAT THE ST  | SUTJE OL STO                               | 1384.51<br>1384.51       | 69053<br>83060<br>84         | 3 (1 ) (1 ) (1 )<br>1   Au<br>1   Au<br>1   Ay | 1000            | vántes<br>138 p. 180         | 23954                      | 141           |
| 4 5 6   |  |                          | 41.4                         |  | 4,32            | 0.00                         | TOTAL                      | \$ 46,800.00  |
| KIND  | SIZE                                       | CONSTRUCTION             | ROOF                         |  | ATION           | CONDITION                    | PRESENT VAL.*              | SALVAGE VALUE |
| House<br>Addition (Open<br>Porch)                     | 28x30x8<br>8x12x8                          | Frame<br>Frame           | C.Shgl.                      | Concr  |                 | Good )                       | 5,000.00                   | \$            |
| Addition (close<br>Porch)                             | d7x8x8                                     | Frame                    |                              |  |                 | " }                          |                            |               |
| Barn  | 36x64x14                                   | Frame                    | Hip roof                     |  | rete            | Good )                       | 8,000.00                   |               |
| Lean<br>Lean  | 16x64x8/1<br>16x64x8/1                     |                          | 11 11                        | "  |                 | " }                          | 18 2493 H IN 118           |               |
| Cattle Shed   | 31x56x8                                    | Frame                    | R.Roofin                     | g Non  | е               | Fair                         | 1,000.00                   |               |
| Calf Barn<br>Bunk House<br>Granary<br>Steel grain bin | 18x38x7<br>16x18x8<br>14x14x7<br>1,000 bu. | Frame<br>Frame           | C.Shgl.                      | Non<br>Concr<br>Concr<br>Non                   | ete<br>ete<br>e | Fair<br>Good<br>Good<br>Good | 600.00<br>500.00<br>300.00 |               |
| Storage House<br>Steel grain bin                      | 14x18x7<br>2,000 bu.                       | Log capacity             | C.Shgl.<br>steel             | None<br>None                                   |                 | Poor<br>Good                 | 100.00<br>250.00           |               |
|   |  |                          | Canobook                     | grand gar                                      | health a        | 110foat (ad                  | surje surjet               | Sparice Train |
|   |  |                          |                              |  |                 | TOTAL*                       | \$ 15,900.0                | 0             |

| TURK YEAR THE LE | 39.74                | CEEE MIVE |          | E 13/80           | DEED   | SPORTION I            | ACRES      |                  | ACTUAL                 | 18      | PRICE .                               |
|------------------|----------------------|-----------|----------|-------------------|--|-----------------------|------------|------------------|------------------------|---------|---------------------------------------|
| GRANTOR          |                      | GRAN      | TEET     | DATE              | BOOK   | PAGE                  | OR ARE     |                  | NSIDERATION            |         | PER ACRE                              |
|                  | 1 00                 | .06       |          | orgati            |  | epinge<br>esty        |            | Es d'Lle<br>u ol |                        | Care de |                                       |
| 00.00 ,12        | 0                    | .of       |          | 0.084.            |  | Veta<br>Pres<br>Surid | oli and    |                  |                        | Bar.    |                                       |
| MPARISON OF ABO  | VE WIT               | H PROPES  | RTY APPR | RAISED            |  |                       |            |                  |                        |         |                                       |
|                  |                      |           |          |                   | GROWI  | ING CROP              | 8          |                  |                        |         |                                       |
| TYPE             |                      | ACRES     |          | IMATED<br>PER ACR | UNI  | IT G                  | ROSS MARKI |                  | OSTS TO MATU           |         | NET CASH<br>VALUE                     |
| 00.001,847.8     |                      | LATER     |          | 320.0             | 5  | 5                     | THE SECOND | 5                |                        |         | •                                     |
|                  |                      |           | 500 (T46 |                   | CHURTY ON THE  | 10000                 |            | 2118 2 183       |                        |         | онія                                  |
|                  | 00.0                 | 00,1      | ( Loc    |                   |  |                       |            | erert.           |                        |         | 0 mu a 1 Ma.                          |
|                  |                      |           |          |                   |  |                       |            | an eve v         | -, belong              | elone   | (Aprol<br>) apit 188<br>(Aprol        |
|                  | 0010                 | 8,90      | ( bo     |                   | Compare C  | ROOT.                 | -115       | obos C           |                        |         |                                       |
| PRAISAL OF TIME  | ER, MI               | NERALS,   |          | i)<br>E           | 1)<br>(i)  |                       | # H        | B                | L\Exiforda<br>L\Seriax |         | Long                                  |
|                  | 10.0                 | 00,00     | 41       |                   | anolf.   |                       | cs         |                  |                        |         | hods elss                             |
|                  | bo. 6<br>60. 0       |           |          |                   | anoli<br>Jarono<br>Marata  |                       |            | Frence           |                        |         | nnin 21<br>min louse<br>mary          |
|                  | 50.0<br>50.6<br>50.6 |           | 200      |                   | one to the contract of the con | · ian                 | 2.16       |                  |                        | 5       | riens les.<br>Won eserci<br>niens Les |
| WEDAL OFWARMS    | Diecus               | se princ  | ipal fac | ctors aff         | ecting c   | onc lue io            | ne)        |                  |                        |         |                                       |
| HERAL REMARKS    |                      |           |          |                   |  |                       |            |                  |                        |         |                                       |
| HERAL REMARKS (  |                      |           |          |                   |  |                       |            |                  |                        |         |                                       |

### Location, Neighborhood, Etc.:

This tract is located 16 miles Southeast from Wheelock, population 220, 22 miles East from Williston, population 10,000,  $1\frac{1}{2}$  miles from a rural school,  $1\frac{1}{2}$  miles from a graded and gravelled mail route road, on a primitive trail road and in a sparsely settled community of mixed nationalities.

Rural schools are situated throughout the area and R.F.D. routes serve farms and ranches. The area is characterized by both large and small farms and by a few ranches which include a thousand or more acres of grazing land together with extensive acreages of bottom cropland. The economy of the area combines the raising of cereal grain and flax with production of above average grade beef cattle. Farms are operated with tractor drawn power equipment. With a few exceptions, most sets of building improvements are below average and not indicative of the development or present prosperity of the area.

Lands of the area range from low level bottomlands of the Missouri flood plain to steeply rolling and rough uplands and level plateaus at an elevation of 175 to 250 feet above the flood plain. Soils of the flood plain vary in texture from fine sandy loams to silty clay loams of variable fertility and productive capacity. Soils of the uplands are mostly clay loams of variable texture utilized primarily for hay and pasture. The most desirable lands of the flood plain are usually utilized for alfalfa and cash grains, while poorly drained lands, valley slopes and the uplands are used for feed crops, hay and grazing.

Dry farming, which incorporates summer fallow practice, is most common. Yields are variable but have been excellent during the past 11 years. Average carrying capacity of grazing lands is about 2.5 acres per a.u. month. Farm tenancy is about 20 per cent and the usual terms are 1/4 crop delivered plus cash rental for improvements and pasture. Average rainfall is about 15 inches, of which the major portion falls during the 4½ month growing season. Cold winters, with snow and blizzards are not uncommon. Drought is a major hazard in crop production, but recent years have been favorable to crops.

### General Description of Entire Unit:

The farm unit comprises 5,401.51 acres of which 1,081.51 acres are being acquired. It is located in a good although sparsely settled community. Several large farm units are located in this community. It is  $l\frac{1}{3}$  miles from a good graded and gravelled mail route road located along the Missouri River Valley between Sanish and Williston, North Dakota. R.E.A. and telephone service have not been made available due to the establishment of the Garrison Dam and Reservoir Project just prior to the period when these services were intended to become available for this community.

The unit is well balanced and its best use is a combination grain and livestock farm. It is in two parts, about two miles apart. One part - 1,081.51 acres being acquired - is situated on and along the river bottom. It consists of a small set of buildings, about 850 acres of bottomland, including 164 acres of cropland, 110 acres of cleared brushland, 267.40 acres of timber grazing land, 30 acres of tillable grassland, 180 acres of marsh and slough land and about 330.11 acres of upland pasture land. The other part - 4,320 acres, none of which is being acquired - consists of a large set of buildings, 180 acres of upland cropland and 4,140 acres upland fenced pasture land. Good water is available from springs and wells on both parts of the unit.

Although not contiguous, the two parts form a very good operative unit. The larger part is the summer range and general headquarters. It is completely fenced, has an ample supply of good water from several wells located springs and has a set of good buildings, including barns and feeding sheds which are used for housing the dairy cows and several bulls. The smaller part is the feed producer and winter quarters for the young stock and beef cattle. Tame hay, including alfalfa and sweet clover, wild hay and cereal grains are produced on this part during the summer season and in the fall when these products have been harvested the livestock is moved to this part for the winter season. Wooded areas on this part afford excellent shelter and feeding lots and an ample supply of water is available from shallow wells and the feeding areas.

### Class of Land, Soils, Topography and Adaptability:

This classification embraces the portion to be acquired. It consists of various classes of land types and soils, ranging from river bottom lands with heavy clay loam to light sandy soils, steeply rolling and roughly broken uplands with heavy to medium heavy soils.

The unit consists of 112 acres of bottom croplands with an almost level topography, ample drainage, silty clay loam soil and a clay subsoil, 52 acres of bottom croplands with an almost level topography, ample drainage, fine sandy clay loam soil and a fine sandy clay subsoil, 110 acres of cleared bottom brushland with a nearly level topography, silty clay loam soil and a clay subsoil, 173 acres of bottom timber-grazing land with a nearly level topography, silty clay loam soil and a clay subsoil, 94.40 acres of bottom timber-grazing land with a nearly level topography, fine sandy clay loam soil and a fine sandy clay subsoil 30 acres of tillable bottom hayland with a nearly level topography, silty clay loam soil and a clay subsoil, 180 acres of marsh and slough lands and 330.11 of steeply rolling and roughly broken upland pasture land.

The 110 acre cleared brush area can be put to grain cropping or alfalfa production at an estimated cost of not to exceed \$10.00 per acre. The 173 acre timber-grazing area supports a few cottonwood trees suitable for timber, has large open areas and can be cleared and put to grain cropping or alfalfa production at an estimated cost of not to exceed \$20.00 per acre. The 94.40 acre timber grazing area supports a few cottonwood trees suitable for lumber, has large open areas and can be cleared and put to grain cropping or alfalfa production at an estimated cost of not to exceed \$25.00 per acre. The 30 acre grassland is suitable for grain cropping and alfalfa. The 180 acre marsh and slough area is interspersed with grass areas and supports a good stand of grass on those areas as well as along the

perimeter. About half of the total area is productive. The 330.11 acre pasture area has a steeply rolling to roughly broken topography, is completely fenced, has available water from springs in the coulees and supports a good stand of grass in the coulees and on the more gently rolling areas. About 60 per cent of this area has a good grass production.

### Description of Buildings:

The buildings on this tract are of little value, but they are appropriate and adequate. The wooded areas afford good shelter and feeding lots. The existing cattle sheds are ample for the protection of the cattle during stormy periods.

### Valuation Summary

|  | entire 5,401.51 acres before acqui                        | The state of the s | \$101,000.00 |
|--|---|--|--------------|
|  | 1,081.51 acres being acquired<br>4,320.00 acres remaining | \$27,000.00  | 90,000.00    |
|  |   | Severance Damage   | \$ 11 000 00 |

### Effect of Partial Taking on Remainder:

The remainder, 4,320 acres, is a compact area which can make a valuable contribution of livestock income when utilized in a balanced unit relationship of croplands and grazing lands, but it is not an area completely adapted to an independent use and it does not possess the qualities which warrant a unit development and improvement program. Its highest and best use is for the grazing of livestock in connection with other lands which can produce and provide alfalfa, feed grains, wooded winter shelter and feed lots.

The ownership of 5,401.51 acres combines diverse land types, classes and land capabilities in a well balanced unit relationship. The taking of 1,081.51 acres severs and destroys this relationship. The remainder, 4,320 acres, therefore, becomes reduced to the same category of value as undeveloped grazing lands which have no unit attachment.

### Sales and Offers of Sale of Nearby Properties:

It is difficult to find a sale of comparable property in this area. In appraisal of the subject property it has, therefore, been necessary for the appraisers to draw upon their experience in appraising other lands and to employ several sales which are comparable to the component parts which make up the lands of the referenced ownership, the portion being acquired and the area remaining. The following sales are offered for consideration as comparable properties.

### Sale No. 1 - Compared with entire ownership

| Grantor      | Grantee               | Date | Book Page                | Acres | Consideration | Per Acre |
|--------------|-----------------------|------|--------------------------|-------|---------------|----------|
| Peter Buchli | Conally and<br>Lorass | 1949 | Information from Grantee | 8,160 | \$122,400.00  | \$15.00  |

This is a property with a large acreage and appropriate improvements for livestock operation. It is well fenced and has a good water supply. The cultivated acreage for producing feed crops is upland with a rolling topography and is not comparable to the bottom croplands in the subject tract in productivity and dependability. The grazing acreages and other factors are fairly comparable. Consideration has been given to the general increase in values of farm and ranch properties since the date of this sale. It is believed that if this property were offered for sale at this time it would command a price of \$20.00 per acre.

### Sale No. 2 - Compared with entire ownership

| Grantor                  | Grantee                  | Date        | Book Page                | Acres | Consideration | Price<br>Per Acre |
|--------------------------|--------------------------|-------------|--------------------------|-------|---------------|-------------------|
| Clarence &<br>Paul Krogh | Ralph and D.A.<br>Murray | May<br>1948 | Information from Grantee | 3,040 | \$57,000.00   | \$18.75           |

This property with appropriate and desirable improvements is utilized for livestock production. It is nearly all upland, but includes some creek bottom, hayland and about 200 acres of cropland. Buildings on this property and on the subject property appraised are fairly comparable, but the cropland is a minor part of the whole and grazing lands are not as productive or dependable as those of the subject property appraised. It is not conveniently located in relation to schools, churches, or market. No portion of its area appears adaptable to irrigation. Consideration has been given to the increase in land values since the date of this sale.

### Sale No. 3 - Compared with portion taken

| Grantor                    | Grantee              | Date    | Book | Page | Acres | Consideration | Per Acre |
|----------------------------|----------------------|---------|------|------|-------|---------------|----------|
| Edward Gol-<br>berg Estate | J. Ernest<br>Johnson | 8/15/51 | 288  | 398  | 320   | \$20,500.00   | \$64.06  |

The sale of this property which consists of approximately 300 acres of good upland cropland and good farm buildings is evidence of the current market value of productive croplands. Croplands on the subject tract appraised are, however, believed to be equally productive and of greater adaptability and dependability. No portion of the above property is irrigated or potentially irrigable.

### Sale No. 4 - Compared with portion taken

| DC.10 . 4 | Compared with the |         |      |      |       |               | Price    |
|-----------|-------------------|---------|------|------|-------|---------------|----------|
| Grantor   | Grantee           | Date    | Book | Page | Acres | Consideration | Per Acre |
| Gilbert   | Woodrow Sveen     | 3/28/49 | 94   | 539  | 160   | \$6,700.00    | \$41.87  |

This is a tract which includes approximately 150 acres of bottom cropland. It has no improvements and is located about 25 miles from market. The soil types and productive capacity compare favorably with the cultivated cropland acreage of the subject tract appraised. Consideration has been given to the increase in land values since date of this sale.

Sale No. 5 - Compared with area remaining

| Grantor          | Grantee     | Date    | Book | Page | Acres | Consideration | Price<br>Per Acre |
|------------------|-------------|---------|------|------|-------|---------------|-------------------|
| Roscoe<br>Hedden | Leroy Perry | 9/12/49 | 288  | 83   | 3,757 | \$22,560.00   | \$6.00            |

at the time of this sale this was unimproved grazing land without buildings, fencing or adequate development. This property and the subject property are similar in its soil types, topography and adaptability, but the value of the improvements, including fences, on the subject tract is considerable greater and not comparable. Consideration has been given to the increase in land values since date of this sale.

Sale No. 6 - Compared with area remaining

| Grantor       | Grantee       | Date    | Book | Page | Acres | Consideration | Price<br>Per Acre |  |
|---------------|---------------|---------|------|------|-------|---------------|-------------------|--|
| George Hedges | E. S. Kreuger | 11/7/50 | 297  | 389  | 1,600 | \$14,000.00   | \$8.75            |  |

At time of sale this property consisted of a poor set of buildings and 300 acres of mediocre upland cropland. Balances were undeveloped upland grazing land similar in type and productive capacity to the upland acreage of the remaining of the subject ownership appraised. Consideration has been given to the increase in land values since date of this sale.

### Timber, Minerals, Etc.:

Investigations disclosed no merchantable timber. There are, however, a few cottonwood trees, suitable for lumber, scattered over a 325 acre area. The estimated value of this timber has been included in the value per acre for the land type. The owner leased the gas and oil rights, covering this unit, to the Dakota Montana Oil Company in September 1951 for a rental of \$1.00 per acre. The lease is for a period of 10 years with the provision that a well be drilled within one year and with a yearly termination provision for non-payment of rental.

No consideration was given in this appraisal to the value of these rights inasmuch as it is anticipated that the fee simple title to this tract will be acquired, reserving gas and oil rights to the owners thereof. No evidence was found to indicate any commercial deposits of merchantable minerals on this tract.

### Conclusion:

In making this appraisal the following factors were taken into consideration: Location, neighborhood, roads, schools, soils, present conditions, condition of farm, sales of comparable properties, potential and best use of farm unit, rentability, saleability and desirability.

# Appraisal Supplement Impairment of Interest in Gas and Oil Rights

| Tract No. <u>Z-2314</u>  |  | Twp. 154,   |  |
|--|--|---|--|
| Name of Owner (Surface) Ru   | th Parker  | Acres_ 1  | Attached)  |
| Acres which can be drilling methods under 40 ac  | on<br>led out from mffshor<br>re spacing pattern on  | e locations by ve   |  |
| Acres which cannot be d<br>drilling methods under 40 ac  | rilled out from <b>sff</b> s<br>re spacing pattern _   | hore locations by 801.51  | vertical   |
| A. Impairment of Royalty In  | terest in Gas and Oi   | l Rights:   |  |
| Acres Value 25.00 \$ 25.00   | Total Mineral  Acre Value  \$ 7,000.00 20,037.75   | Est% of Impairment 10% 20%  | Total Amount of Impairment \$ 700.00 4,007.75              |
|  |  |   | 4707.75  |
| Recommended Compensation for B. Impairment of Leasehold  |  |   | - \$4.707.35   |
| Acres Impai  | rment Per Acre   | Amount \$   | of Impairment  |
|  |  |   |  |
|  |  |   |  |
| Recommended Compensation for   | Impelement of Logge  | hold Intonest   |  |
| C. Total of Impairment:  |  | easehold  | - \$   |
| Remarks: Basic recommendation Sidwell report to Garrison In Recommendations Concerning In and Gas Interests."  D. The amounts above indicated to the value of the gas and or reserved to owners and subordor intermittently. The amount the best information available by experts following study of present or intended future in | cons relating to determine to determine to are believed to be interests in this dinated to the Governats determined as imple and by the opinion of the impairment prob | rmination of imparch 1955 titled "A esulting from Subbe the impairment stract when such mment's right to pairment are subsets and recommendated of the stract of the stract when such pairment are subsets and recommendated of the stract when such the stract was a stract when such as a stract was a stract was a stract when such as a stract was | which results interests are flood permanently tantiated by |
| Date of Valuation 7 August   | 1953   | 1 Totala  | 70   |
| Date of Report 9 Februar   |  | TOR LUNDEEN   |  |

MRG FORM 230 23 MAR 55(Tentative)

# Appraisal Supplement Impairment of Interest in Gas and Oil Rights

| Tract No. Z-2314  |  |  | , Rge. 97<br>ap Attached)  |
|---|--|--|--|
| Name of Owner (Surface  | e) Ruth Parker   |  | 1,081.51   |
| Acres which can drilling methods unde   | be drilled out from off<br>r 40 acre spacing patter  | shore locations by   | vertical   |
| Acres which cann<br>drilling methods unde   | ot be drilled out from ;<br>r 40 acre spacing patte  | offshore locations   | by vertical  |
| A. Impairment of Roy  | alty Interest in Gas and   | d Oil Rights:  |  |
| Acres   Mineral A   Value   25.00   25.00   | \$ 7,000.00  | Impairment 10%   | Total Amount of Impairment \$ 700.00 4,007.75  |
| Recommended Compensat   | ion for Impairment of Ro   | oyalty Interest  | \$4,707.\$5  |
| B. Impairment of Lea  | sehold Interest in Gas   | and Oil Rights:  |  |
| Acres   | Impairment Per Acre  | Amoun<br>\$  | t of Impairment  |
|   |  |  |  |
| Recommended Compensat   | ion for Impairment of Le   | easehold Interest -  | \$   |
| C. Total of Impairment  | nt: Royalty ar   | nd Leasehold   | \$   |
| Sidwell report to Gar<br>Recommendations Conce<br>and Gas Interests."  D. The amounts above<br>to the value of the gar<br>reserved to owners and<br>or intermittently. The<br>the best information as | mendations relating to<br>rison District dated 30<br>rning Impairment in Val-<br>indicated are believed<br>as and oil interests in<br>a subordinated to the Go<br>he amounts determined as<br>available and by the opi | March 1955 titled ue Resulting from S to be the impairment this tract when such exernment's right to simpairment are submisons and recommend | "Analysis Report and ubordination of Oil of which results the interests are of flood permanently estantiated by dations provided |
| present or intended for   | study of the impairment<br>sture interest in this p  | problem. I certify property.   | that I have no   |
| Date of Valuation 7   | August 1953  | 7/1  |  |
| Date of Report9   | February 1956  | VICTOR LUNDEEN Appraiser   |  |

MRG FORM 230 23 MAR 55(Tentative)

/ile in Z-2314 & Z-2315

| Impairmen   | Appraisal Supplement<br>t of Interest in Gas and Oil  | l Rights  |   |
|---|---|---|---|
| Tract No. Z-2315 Part (D. Z. Name of Owner (Surface)  | -43141  | Twp, (Tract lap A   | ittached)   |
| Acres which can be d  | rilled out from onshore loca<br>acre spacing pattern  | ations by vert  | cical   |
| Acres which cannot be drilling methods under 40   | e drilled out from onshore acre spacing pattern97.  | locations by v  | vertical *  |
| A. Impairment of Royalty  | y Interest in Gas and Cil R   | ights:  |   |
| Acres Value \$ 25.00  |   | Impairment  | Total Amount of impairment \$ 488.00                            |
|   |   |   |   |
| Recommended Compensation  | for Impairment of Royalty In  | nterest 3   | 488.00  |
| B. Impairment of Leaseh   | old Interest in Gas and Oil   | Rights  |   |
| Acres   | Impairment Per Acre   | Amount of   | Impairment  |
|   |   |   |   |
| Recommended Compensation .  | for Impairment of Leasehold   | Interest  | φ   |
| C. Total of Impairment:   | Royalty and Leasehold   | 3   |   |
| C. V. Sidwell report to C   | lations relating to determin<br>larrison District dated 30 M<br>as Concerning Impairment in<br>Gas Interests."  | larch 1955 tit  | led "Analysis   |
| reserved to owners and sul<br>or intermittently. The ar<br>the best information avail<br>by experts following study | dicated are believed to be to<br>ad oil interests in this tra-<br>bording ted to the Government<br>mounts determined as impaired<br>lable and by the opinions are<br>y of the impairment problem.<br>e interest in this property. | ct when such<br>t's right to f<br>tent are subst<br>ad recommendat<br>I certify t | interests are<br>lood permanent<br>antiated by<br>ions provided |
| Date of Valuation 7 Aug   | ast 1953  | La par  |   |
| Date of Report 29 Jun   | ne 1956 41CTON  | LUMBEN  |   |

Appraiser

MRG FORM 230 23 Nor. 35 (Tontutive)

• File in Z-2314 & Z-2315

### Appraisal Supplement Impairment of Interest in Gas and Oil Rights

| t |  |
|---|--|

| Tract No. Z-2315 Part (Disputed accretions to Z-2314)  Twp, Rge   |
|---|
| Name of Owner (Surface) Acres 97.60   |
| Acres which can be drilled out from onshore locations by vertical drilling methods under 40 acre spacing pattern  |
| Acres which cannot be drilled out from onshore locations by vertical drilling methods under 40 acre spacing pattern 97.60   |
| A. Impairment of Royalty Interest in Gas and Oil Rights:  |
| Mineral Acre  Value  Value  Total Mineral  Est. % of Total Amount  Impairment  97.60  Total Amount  Acre Value  Total Mineral  Acre Value  Acre Value  20%  488.00  |
| Recommended Compensation for Impairment of Royalty Interest 488.00  |
|   |
| B. Impairment of Leasehold Interest in Gas and Oil Rights   |
| Acres  Impairment Per Acre  Amount of Impairment  |
|   |
| Recommended Compensation for Impairment of Leasehold Interest \$  |
| C. Total of Impairment: Royalty and Leasehold 3   |
| Remarks: Basic recommendations relating to determination of impairment from C. V. Sidwell report to Garrison District dated 30 March 1955 titled "Analysis Report and Recommendations Concerning Impairment in Value Resulting from Subordination of Oil and Gas Interests."  |
| D. The amounts above indicated are believed to be the impairment which results to the value of the gas and oil interests in this tract when such interests are reserved to owners and subordinated to the Government's right to flood permanent or intermittently. The amounts determined as impairment are substantiated by the best information available and by the opinions and recommendations provided by experts following study of the impairment problem. I certify that I have no present or intended future interest in this property. |
| Date of Valuation 7 August 1953   |
| Date of Report 29 June 1956 VICTOR LUNDERN Appraiser  |

MRG FORM 230 23 Jun 55 (Tonictive)

# Disputed Accretions Appraisal Supplement Impairment of Interest in Gas and Oil Rights

| Tract No. Z-2315 (Part)  Name of Owner (Surface) Ruth Parker (Purported Owner)  Twp, Rge_ (Tract Map Attached)  Acres 97.60  |
|--|
| Acres which can be drilled out from onshore locations by vertical drilling methods under 40 acre spacing pattern   |
| Acres which cannot be drilled out from onshore locations by vertical drilling methods under 40 acre spacing pattern 97.60  |
| A. Impairment of Royalty Interest in Gas and Oil Rights:   |
| Acres Value Acre Value Est. % of Total Amount  Acres Value Acre Value Impairment of impairment  97.60 \$ 25.00 \$ - 20% \$ 488.00  |
|  |
| Recommended Compensation for Impairment of Royalty Interest 3 488.00   |
| B. Impairment of Leasehold Interest in Gas and Cil Rights  |
| Acres Impairment Per Acre Amount of Impairment   |
|  |
| Recommended Compensation for Impairment of Leasehold Interest \$   |
| C. Total of Impairment: Royalty and Leasehold 3  |
| Remarks: Basic recommendations relating to determination of impairment from C. V. Sidwell report to Garrison District dated 30 March 1955 titled "Analysis Report and Recommendations Concerning Impairment in Value Resulting from Subordination of Oil and Gas Interests".   |
| D. The amounts above indicated are believed to be the impairment which results to the value of the gas and oil interests in this tract when such interests are reserved to owners and subordinated to the Government's right to flood permanent, or intermittently. The amounts determined as impairment are substantiated by the best information available and by the opinions and recommendations provided by experts following study of the impairment problem. I certify that I have no present or intended future interest in this property. |
| Date of Valuation 1 November 1956  |
| Date of Report 20 November 1956 VICTOR LUNDEEN Appraiser   |
| MRG ECEL 220 DO 1 DO 1   |

MRG FORM 230 23 Mar. 55 (Tornictive)

Chief, Appraisal Branch

Settlement of Interests Claimed - Tract Z-2314 and Part Z-2315 (Disputed accretions)

It is my recommendation that in negotiations to effect settlement for interests claimed by defendant landowner, Ruth Parker, in the subject tracts, the appraisals dated 11 October 1951 and 13 February 1953 be referred to for the Corps estimate of market value. It may be noted that the difference in the appraised amounts is a sum of \$3,000, which represents the appraised value of the disputed accretions (Z-2315 Part).

Inasmuch as the defendant landowner in previous negotiations for option was apprised of the appraised values, it is assumed that demands in settlement will relate a percentage increase to these amounts. Therefore, in discussion and considerations for purposes of effecting contingent settlement with respect to accretions, it is suggested that the amount of \$3,000 above mentioned be indicated as the market value of the accretions at the time of taking of the parent tract. Separate appraisal is provided with respect to impairment of oil and gas rights.

FICTOR LUNDEEN

VL/ps

PROJECT Garrison Dam and Appraisal for Tract Reservoir, North Dakota EE-2831 APPRAISAL REPORT EE-2831 - 1 & 2 CITY, DISTRICT, OR TOWNSHIP COUNTY STATE Two 154 - Rge 100 Williams North Dakota ADDRESS PROPERTY OF J. E. Sandberg et al 430 - 4th Ave West, Williston, N. Dak. Fave Sandberg, wife LAND DESCRIPTION EE-2831 - 1 - Reuben Brekken, R.F.D., Williston EE-2831 - 2 - Emil Bakken, R.F.D., Williston Parcel No. 1 - Those portions of the East half of the Southeast quarter (E2SE2). Northwest quarter of the Southeast quarter (NW SEA), West half of the Northeast quarter (WENEZ), and East half of the Northwest quarter (EZNWZ) of Section 30, Township 154 North, Range 100 West of the 5th P.M., which lie north and west of the Missouri River; except that portion of the Northeast quarter of the Northwest (NEINWA) of said Section 30 which lies north and west of the following described line: Beginning at a point on the north line of said Section 30 which point is intersected by the center line of Stony Creek approximately 265 feet west of the north quarter corner of said Section 30, thence southwesterly, following the center line of said Stony Creek downstream, a distance of approximately 400 feet to a point where said center line is intersected by the former course of said Stony Creek; thence southwesterly along the center line of said former course of said Stony Creek to the west line of said Northeast quarter of the Northwest quarter (NE4NW4) of said Section 30, and there terminating. Parcel No. 2 - Lot 2 of Section 6 in Township 153 North, Range 100 West of the 5th P.M.; South half of the Southeast quarter (S2SE1) of Section 31 in Township 154 North, Range 100 West of the 5th P.M. her sume twee of soil and production soten ini. molding work for district A . heart be a drow but with Lable on this tradt from Stony Creas. There is no fence or elts list like at box not had because I or it again to to este Oli all Degoleveb, sem s'Ob els teitob seust atm a rostore rather und comming project. elualiava con ai reduc on , coste bos atte grane est guir survert value (Contd on attached sheet 8Dec52 ps APPRAISAL VALUATION AREA (Acres) VALUE OF GROWING CROPS: SEVERANCE TOTAL PRESENT MARKET VALUE DAM AGES \$ 303.50 None I CERTIFY THAT I HAVE CAREFULLY EXAMINED THE ABOVE DESCRIBED PREMISES AND THE AMOUNT INDICATED REPRESENTS MY BEST UNBIASED JUDGMENT AS TO 6/23/52 THE PRESENT MARKET VALUE OF THE FEE SIMPLE TITLE THERETO, EXCEPT AS (12/1/52)OTHERWISE INDICATED. I DO FURTHER CERTIFY THAT I HAVE NO PRESENT OR INTENDED FUTURE INTEREST THEREIN. APPROVED BY (Name and Title) Chief, Appraisal Branch

1 Jan 46

Army-CE-Omaha, Nebr.

of Williams County, a town approximately 8,000 population d good job potential and stable market point. This is a well developed community served by conveniences such as R.E.A., rural telephone and good all-weather roads. The buildings in this community for

the most part are well kept and modernized.

This area is comprised of about 1/3 subsistence farms and the balance small farm units. Consequently, the economy is primarily small grain and forage production along with a few subsistence cattle. Some alfalfa is grown, however, most of the forage is derived from native or seeded tame grass areas. The topography of the area ranges from level bottomlands to gently rolling benches which bound the Missouri River flood plain. The bottomland soils range from silty clay loams to clay loams of heavy texture and the condition of the soil is good. Soils of the uplands are predominantly silty clay loams with well drained sub-soil structures. A large block of the bottomlands in this area are subject to spring flooding from upland drainage, a community developed project. Crops during the past 10-12 years have been very good. Annual rainfall approximates 15" annually, with the bulk of the rain falling during the  $4\frac{1}{2}$  month growing period. Drought, although somewhat lessened by spring flooding practice, still constitutes the chief hazard to both crop and livestock production.

CHARACTER, TOPOGRAPHY AND ADAPTABILITY Subject tract consists of 2 non-contiguous parcels of cropland owned but not operated by J. E. Sandberg of Williston. One tract of land is located 2 miles Southeast of Williston and the other tract is located 3 miles Southeast of Williston. Both tracts on a good all weather road and within a mile of a rural school The tract nearest town consists of 183.50 acres which is subject to river erosion and is in part cut by the meander of Stony Creek. 113 acres of this tract is in one field which has a good silty clay loam soil with nearly level topography and has good crop production potential. A 40 acre field has same type of soil and production potential, however, it is split up into small pieces and does not lend itself to as efficient an operation as above portion of tract. 30 acres consists of the former course of Stony Creek. For the most part, it is dry, and affords a good crop of hay. It could be tilled however, it is wet in the spring and work is delayed. A small 5-6 acre portion of this 30 acre field is covered with small brush and hay and is tillable with a small expenditure for clearing. Water is available on this tract from Stony Creek. There is no fence or other improvements. The 120 acre tract lies in an L-shaped fashion and is all tillable except a low spot in the Southwest corner. This tract during the 30's was developed for irrigation and was irrigated by gravity from the Missouri River. This tract was a welfare board sponsored community garden and canning project. The river receded and moved away from the tract during the early 40's and since, no water is now available

ASSESSED VALUE (Contd on attached sheet)

YEAR ACRES LAND IMPROVEMENTS OTHER TOTAL
Not available \$ \$ \$

### REMARKS RELATIVE TO ASSESSED VALUE

Shart the attention of the con-

Investigation reveals that no relationship exists as between assessed value and fair market value in this area.

EE-2831

CHARACTER, TOPOGRAPHY AND ADAPTABILITY (Contd)

no irrigation is being carried on. The ditches are still in evidence but are constructed in such a manner that they could be easily filled with a bulldozer. The soils are silty clay loams with adequate drainage and nearly level topography.

There is a granary located on this acreage for seed and surplus grain storage. Also there is a potato warehouse (pit type) which is partially caved in and has no utility at this time. Salvage poles of same have been sold by owner to a neighbor who has not at present date removed this salvage. This tract is perimeter fenced with 2 and 3 barb wire on ash posts. There is no water on this tract, however, same could readily be provided through sandpoint well.

Due to proximity of these tracts to City of Williston with its job potential the land assumes rural residence site value of slightly more than average desirability.

| A Company of the Comp |               |                          | VALUATION          | OF LAND   |  |  |                     |
|--|---------------|--------------------------|--------------------|---|--|--|---------------------|
| . PRESENT USE  |               | L TYPE                   | TOPOGRA            | PHY   | AREA   | UNIT VALUÉ   | TOTAL VALUE         |
| SIDA REA   |               | 167 27/A                 | 79                 |   |  | 5  | S                   |
| EE-2831 - 1  | 100.108       |                          | hal                | rincer de s   |  | er Micro-Ti  | at and the state of |
|  |               |                          | book :             | int. Hair   |  |  |                     |
| Bottom Cropland  | db. 000       | Silty clay               |                    | level .   | 113.50   | 80 •00   | 9080.00             |
| D-++ 0 1- II-  | 1             | texture                  |                    |   | 17/0/2   |  |                     |
| Bottom Creek Ha<br>& Brush area  | yland         | Silty clay               | Undulat            | ing   | 30.00  | 30.00  | 900.00              |
| Bottom amonland  |               | 941+1                    | TT 4 - 7 - 4       |   | 40.00  | 00.00  |                     |
| Bottom cropland  |               | Silty clay<br>loam, heav |                    |   | 40.00  | 60.00  | 2400.00             |
| EE-2831-2  | . bed amia    | 1 sauxing                | Stony C<br>meander |   | i water of   | e to seriou  | real famoe. dt      |
| Bottom Cropland  |               | Silty clay               |                    |   | 115:00   | 80.00  | 9200.00             |
| 2 2 2 1000   |               | loam                     | Modity             | 10.91   | 110.00   | 80.00  | 9200.00             |
| Bottom Low Gras  | s Area        | Silty clay               | Low                | chal lodg   | 5  | 30.00  | 150.00              |
| Irrigation dito  |               | loam                     | ne'si 'to.         | DECEMBER OF THE PERSON OF THE | bite . Brades  | and the same   | Ed to surse 06      |
| 1075 VIP   |               | 72 NEW                   |                    | tian I  | di Territza  | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1  |                     |
|  |               |                          |                    |   | 707 50   | TOTAL  | \$ 21730-00         |
|  |               | V                        | INATION OF         | IMPROVEMENT   | 303.50   | TOTAL  | \$ 21730.00         |
| KIND   | SIZE          | CONSTRUCTION             | ROOF               | FOUNDATION  |  | CANADA SANCE | SALVAGE VALUE       |
|  | sea driv      | (Approximate)            | Ends Som           | 1 1 PE 6.   | 02.697   | 5  | out ( Nosiguilla, ) |
| Granary  | 16x24x8       | Frame                    | Roll               | Timber  | Fair   | 250.00   | 30.00               |
|  | AP IN THE     |                          | roofing            |   |  |  |                     |
| Potato Cellar  | Partia        | lly caved i              | n, sold            | in presen   | t state to   | Usher Burd   | ick 0               |
|  |               |                          |                    |   |  |  |                     |
|  |               |                          |                    |   |  | CHARTON S  | SOUR TO ASSESSED    |
|  |               | offers for               |                    |   |  | 7.5  |                     |
|  |               |                          |                    |   |  | THE PARTY OF THE P | wo was been ere ow  |
|  |               |                          |                    |   | No. of the last  |  |                     |
|  |               |                          |                    |   |  |  |                     |
|  |               |                          |                    |   |  |  |                     |
|  |               | Min activities           |                    |   |  |  |                     |
|  | 2             |                          |                    |   |  |  |                     |
|  |               |                          |                    | -   |  |  |                     |
|  |               |                          |                    |   |  |  |                     |
|  |               |                          |                    |   |  |  |                     |
| ammallo's saring   | Larebi hi     | st cherost               | ( unnivers         |   | he contrat to  | Anning pagent  |                     |
| adone Lievac   | o , serift    | July 2 Column            | Lake               | Jud accept  | official Later   | es ban car   | coos encusos.       |
| THE PERSON NEW MORE  | 1 2 2 2 2 2 2 | 61779 E 1 2 1 7 8        |                    | 81 . (28)   | and the state of t | Gen salisari   | ESSUE LUTUR, LO     |
|  |               |                          | and market         | w./e  | TOTAL*   | \$ 250.00  | \$ 30.00            |
| * Batimated contribut  |               |                          |                    |   | e property as  | a whole.   |                     |

|             |            | S AND OF       | FERS OF S    | SALE OF N        | EARBY PROPERT    |                         |  |
|-------------|------------|----------------|--------------|------------------|------------------|-------------------------|--|
| GRANTOR     | GRANTEE    | DATE           | DEED<br>BOOK | PAGE             | ACRES<br>OR AREA | ACTUAL<br>CONSIDERATION | PRICE -  |
| Ester Muntz | George Cox | 1/1/52         |              | orded<br>for Dee | 40<br>d          | \$4500.00               | \$112.50   |
| Ella Rhea   | Reuben Bre | kken<br>7/3/52 | 103          | 387              | 160 LA .         | \$8000.00               | 50.00  |
| 00.009      | 00.00      | 2.08           |              | eltuIvi          | N CARRELLE       | ol Sul                  | TO THE THE TANK THE T |

comparison of amove with property appraised 1. Subject sale is rural subsistence acreage and residence. 36 acres of silty clay loam soil cropland, balance farmstead. Buildings are adequate for operation of acreage. Located 4 miles Southeast of Williston on good all weather road which serves as R.F.D. Subject tract bounds sale No. 1 on the north side, it is superior from topographical features, however, does not have improvements. 2. An unimproved tract, surface title only, 76 acres of bench cropland, silty clay loam soil, 32 acres of bottom cropland, silty clay loam, heavy texture, with nearly level topography. 20 acres of tillable grassland, and 32 acres of tree brush and drainage course.  $3\frac{1}{2}$  miles

|            | -        |                             | SHOWING C  | RUPS                  | (Conta below).   |                   |
|------------|----------|-----------------------------|------------|-----------------------|--|-------------------|
| TYPE       | ACRES    | ESTIMATED<br>YIELD PER ACRE | UNIT VALUE | GROSS MARKET<br>VALUE | COSTS TO MATURE,<br>HARVEST & MARKET                   | NET CASH<br>VALUE |
| None OSVIS | TATEL .  | 00.503                      | T SET T    | MOLTARIAN -           | \$   | 3                 |
|            | ry com   | parable as to               | soil typ   | es and topog          | ther road.<br>raphy with respect<br>part better locate |                   |
|            |          |                             |            | Military              |  |                   |
| C 46.040   | n pulsal | or or de tue                | oug ni     | Ion all how           | sivilaidasi t  | alle? Atmos       |

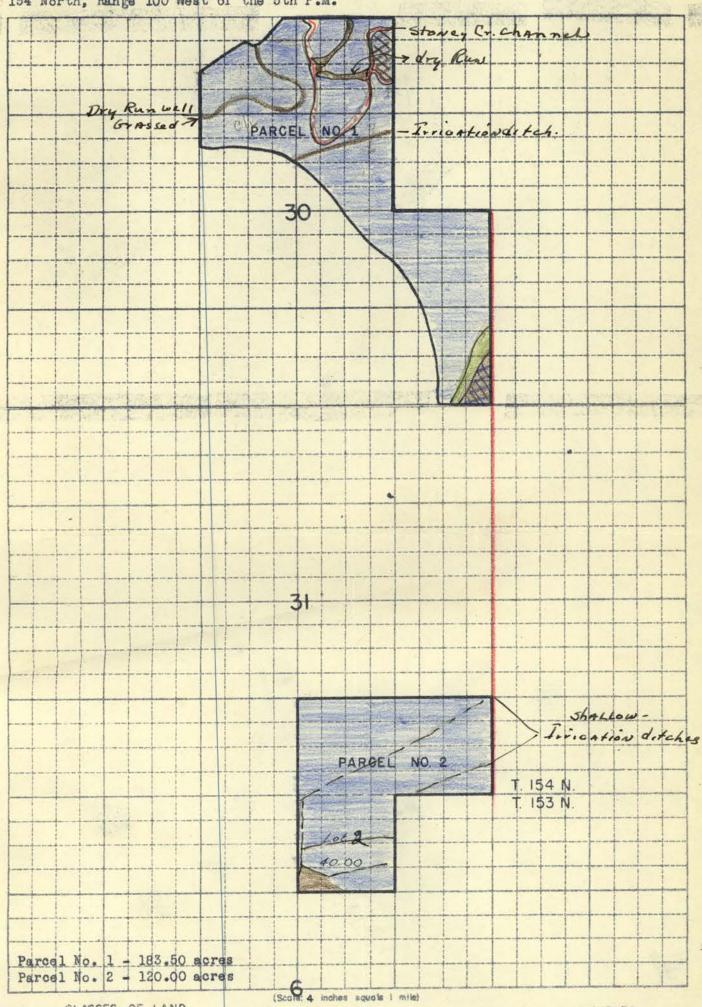
APPRAISAL OF TIMBER, MINERALS, ETC. There is no timber on this tract. No consideration has been given mineral interest in this appraisal as it is assumed same will be reserved by owner.

GENERAL REMARKS (Discuss principal factors affecting conclusions) Factors considered are as follows: location, access, and general production potential, market vacilities, conveniences such as R.E.A., R.F.D., road conditions, highest and best use of land involved is that of rural subsistence residence property. Desirability of this tract as such is average.

Appraisal Supplement
Impairment of Interest in Gas and Oil Rights

| The Transfer of the east in das and off atgnts  |
|---|
| Tract No  |
| Name of Cymer (Surface) / Kondberg (Tract Map Attached) Acres 303.50  |
| Acres which can be drilled out from onshore locations by vertical drilling methods under 40 acre spacing pattern  |
| Acres which cannot be drilled out from onshore locations by vertical drilling methods under 40 acre spacing pattern 303.50  |
| A. Impairment of Royalty Interest in Gas and Cil Rights:  |
| Acres Value Total Mineral Est. % of Total Amount of impairment 303.50 \$ 20 \$ 1214   |
|   |
| Recommended Compensation for Impairment of Royalty Interest - 11200   |
| B. Impairment of Leasehold Interest in Gas and Oil Rights   |
| Acres Impairment Per Acre Amount of Impairment  |
|   |
|   |
| Recommended Compensation for Impairment of Leasehold Interest \$  |
| C. Total of Impairment: Royalty and Leasehold 3   |
| Remarks: See also Sidevell report of 30 flux 19   |
| Impairment bases in this time of  |
| D. The amounts above indicated are believed to be the to the value of the gas and oil interests in this tract when such interests are reserved to owners and subordinated to the Government's or intermittently. The amounts determined as impairment are substantiated by the best information available and by the opinions and recommendations provided by experts following study of the impairment problem. I certify that I have no present or intended future interest in this property.  Date of Valuation 7 am 193 |
| Date of Report 31 may 1916 Outo Sundeen   |
| Appraiser   |

Project symbol No. Garrison Dam - Reservoir Area Tract No. EE-2831 Name of owner J. E. Sandberg, et ux \_\_\_\_Date\_\_ 5 December 1952 Field work by Mary C. Jackson County - Williams Description of tract State - North Dakota Parcel No. 1 - Those portions of the East half of the Southeast quarter (ESSE2). Northwest quarter of the Southeast quarter (NWSEZ), West half of the Northeast quarter (WanE1), and East half of the Northwest quarter (E2NN1) of Section 30, Township 154 North, Range 100 West of the 5th P.M., which lie north and sect of the Missouri River; except that portion of the Northeast quarter of the Northwest (NEANWA) of said Section 30 which lies north and west of the following described line: Beginning at a point on the north line of said Section 30 which point is intersected by the center line of Stony Creek approximately 265 feet west of the north quarter corner of said Section 30, thence southwesterly, following the center line of said Stony Creek downstream, a distance of approximately 400 feet to a point where said center line is intersected by the former course of said Stony Creek; thence southwesterly along the center line of said former course of said Stony Creek to the west line of said Northeast quarter of the Northwest quarter (NE4NW4) of said Section 30, and there terminating. Parcel No. 2 - Lot 2 of Section 6 in Township 153 North, Range 100 West of the 5th P.M.; South half of the Southeast quarter (SESE4) of Section 31 in Township 154 North, Range 100 West of the 5th P.M.



GLASSES OF LAND

Grop land

Pasture land

Forest land Small laugh

# Huy hand - Liesar

Grades of each class of land must be shown on the map proper.

\* Name of any other class of land involved.

M.4 inches aquate 1 mile)

I certify that this is an accurate map of Tract EE-2831

based on Survey, Deed Desc. & G.L.O. Rods. , which shows this tract to contain 303.50 acres, more or less Name Mary C. Jackson

Title Draftsman

Date 5 December 1952

Indicate whether map is based on General Land Office records, aerial survey, dead description or actual survey.

E Flood Flow Modeling



**To:** 4384-0001 File

**From:** Joel Toso, PE (MN), Wenck Associates, Inc.

Bryce Cruey, PE (MN), Wenck Associates, Inc.

Rena Weis, EIT, Wenck Associates, Inc.

Date: January 4, 2018, revised March 23, 2018

**Subject:** Hydraulic Modeling of the Historic Missouri River

#### Introduction

The purpose of this memo is to describe hydraulic modeling efforts used to determine historic flooding levels on the Missouri River from the northern boundary of the Fort Berthold Indian Reservation (approximate river mile 1484) to the southern border of sections 33 and 34, Township 153 North, Range 102 West (approximate river mile 1565), prior to the installation of Garrison Dam in 1953. This was done using a hydraulic model and historical data. The results of the model will be used to identify potential areas of frequent flooding and assist in determining the ordinary high water mark (OHWM).

### **Data Gathering**

To perform this analysis, historical data collected from the North Dakota Department of Mineral Resources (DMR), the U.S. Geological Survey (USGS), and the U.S. Army Corps of Engineers (USACE). A list of the data used to develop the hydraulic model is provided in Table 1.

Table 1: Historical data used for HEC-RAS model development

| Data  | Source                                       | Date             |
|---|--|------------------|
| Aerial Photographs (1951)   | North Dakota Department of Mineral Resources | 1951             |
| Cross Section Location Map  | USACE - Omaha District                       | Pre-dam, undated |
| Garrison - Lake Sakakawea DSS<br>Cross Sections   | USACE - Omaha District                       | Pre-Dam, undated |
| Historical Peak Flow Data at<br>USGS Gauge Station 06330000,<br>Missouri River NR Williston, ND | USGS   | 1929-1965        |

### **Model Development**

The Hydraulic Engineer Center's River Analysis System (HEC-RAS), a software platform developed and maintained by the USACE, was selected to develop a hydraulic model of the Missouri River.



### **Channel and Overbank Geometry**

The USACE provided a file containing 19 available historic cross sections for the study reach. Cross section coordinates were copied from the USACE file to the HEC-RAS model. Some cross sections had duplicate points and/or more than 500 data points. These conditions trigger an error in HEC-RAS, so the built-in filtering tool was used to alleviate the issue.

Downstream reach lengths were measured in GIS along the centerline of the Missouri River channel from the 1951 aerial imagery.

The left and right overbank (LOB and ROB) stations were determined by measuring the river width on the aerial photographs and selecting points from the cross section data that would create a channel with a similar width. In addition to the channel width, the vertical geometry of the cross sections was considered, so the LOB and ROB stationing would occur at natural elevation breaks in the cross section.

Contraction and expansion coefficients were designated as 0.1 and 0.3, respectively.

### **Manning's Roughness Coefficient**

Manning's roughness coefficient of 0.035 was initially used for the channel section (taken from Ven Te Chow's 1959 Open-Channel Hydraulics, pg 120, item 15). A coefficient of 0.04 was used for overbank flow areas. The Chow reference also shows Manning's roughness can be as low as 0.03 for channels (see Table 5-6, pg 112 and 113, item D-1 and D-2). Both were used in the model to check the effect.

#### **Hydrology**

Peak flow data was collected from the USGS website at gage station 06330000, Missouri River NR Williston, ND, from 1929 – 1965. Although data was acquired up to 1965, to account for pre-Garrison Dam conditions, it was only analyzed from 1929-1953. A Log Pearson Type 3 Distribution was used to calculate flows corresponded with the 1.1-Year, 1.5-Year, 2-Year, and 2.5-Year probability storms in this region (Table 2).

**Table 2: Peak Flow Frequency** 

| Frequency | Flow (cfs) |
|-----------|------------|
| 1.1-Year  | 51000      |
| 1.5-Year  | 66000      |
| 2-Year    | 85000      |
| 2.5-Year  | 90000      |

### **Boundary Condition**

The downstream boundary conditions was assumed to be normal depth. The downstream slope was calculated to be 0.002 ft/ft.

### **Model Application**

Once the HEC-RAS model was constructed, a steady flow, subcritical analysis was performed using the normal depth boundary conditions. The storm events from Table 2 were analyzed to investigate a range of frequent flow events.



### **Model Results**

Table 3 shows the results of the model analysis. Columns 4 through 6 shown the results when a Manning's n of 0.035 for the channel. Column 7 was added to demonstrate the effect of using 0.03 for the channel. Flood levels are reduced approximately one foot.

**Table 3: HEC-RAS Model Results** 

| Table 3: HEC-    | -RAS MOU |                  | Max Chl Dpth | W.S. Elev | Vel Chnl | W.S. Elev        |
|------------------|----------|------------------|--------------|-----------|----------|------------------|
| River<br>Station | Profile  | Q Total<br>(cfs) | (ft)         | (ft)      | (ft/s)   | (ft)<br>(n=0.03) |
| 1668.8           | 1.1-YR   | 51000            | 21.47        | 1856.47   | 1.75     | 1855.81          |
| 1668.8           | 1.5-YR   | 66000            | 22.85        | 1857.85   | 1.75     | 1857.14          |
| 1668.8           | 2-YR     | 85000            | 24.34        | 1859.34   | 1.79     | 1858.59          |
| 1668.8           | 2.5-YR   | 90000            | 24.66        | 1859.66   | 1.79     | 1858.93          |
| 1663.9           | 1.1-YR   | 51000            | 17.83        | 1850.83   | 4.39     | 1849.82          |
| 1663.9           | 1.5-YR   | 66000            | 19.62        | 1852.62   | 4.82     | 1851.51          |
| 1663.9           | 2-YR     | 85000            | 21.33        | 1854.33   | 5.41     | 1853.28          |
| 1663.9           | 2.5-YR   | 90000            | 21.7         | 1854.7    | 5.57     | 1853.71          |
| 1661.3           | 1.1-YR   | 51000            | 25.21        | 1850.21   | 0.72     | 1849.22          |
| 1661.3           | 1.5-YR   | 66000            | 27.06        | 1852.06   | 0.75     | 1851             |
| 1661.3           | 2-YR     | 85000            | 28.79        | 1853.79   | 0.81     | 1852.84          |
| 1661.3           | 2.5-YR   | 90000            | 29.15        | 1854.15   | 0.83     | 1853.25          |
| 1659             | 1.1-YR   | 51000            | 21.99        | 1849.99   | 1.72     | 1848.98          |
| 1659             | 1.5-YR   | 66000            | 23.85        | 1851.85   | 1.82     | 1850.77          |
| 1659             | 2-YR     | 85000            | 25.57        | 1853.57   | 1.88     | 1852.62          |
| 1659             | 2.5-YR   | 90000            | 25.93        | 1853.93   | 1.9      | 1853.02          |
| 1655.8           | 1.1-YR   | 51000            | 21.12        | 1848.12   | 3.01     | 1847.03          |
| 1655.8           | 1.5-YR   | 66000            | 23.09        | 1850.09   | 3.27     | 1848.91          |
| 1655.8           | 2-YR     | 85000            | 25           | 1852.01   | 3.34     | 1850.89          |
| 1655.8           | 2.5-YR   | 90000            | 25.41        | 1852.41   | 3.32     | 1851.33          |
| 1650.3           | 1.1-YR   | 51000            | 24.11        | 1842.11   | 3.21     | 1841.21          |
| 1650.3           | 1.5-YR   | 66000            | 25.76        | 1843.76   | 3.68     | 1842.75          |



| 1650.3 | 2-YR   | 85000 | 27.62 | 1845.62 | 4.19 | 1844.47 |
|--------|--------|-------|-------|---------|------|---------|
| 1650.3 | 2.5-YR | 90000 | 28.06 | 1846.06 | 4.32 | 1844.89 |
| 1646   | 1.1-YR | 51000 | 23.93 | 1839.93 | 1.54 | 1839.05 |
| 1646   | 1.5-YR | 66000 | 25.57 | 1841.57 | 1.68 | 1840.61 |
|        |        |       |       |         |      |         |
| 1646   | 2-YR   | 85000 | 27.39 | 1843.4  | 1.83 | 1842.32 |
| 1646   | 2.5-YR | 90000 | 27.84 | 1843.84 | 1.86 | 1842.74 |
| 1639.5 | 1.1-YR | 51000 | 22.01 | 1836.01 | 3.21 | 1834.91 |
| 1639.5 | 1.5-YR | 66000 | 23.84 | 1837.84 | 3.44 | 1836.75 |
| 1639.5 | 2-YR   | 85000 | 25.83 | 1839.83 | 3.66 | 1838.62 |
| 1639.5 | 2.5-YR | 90000 | 26.31 | 1840.31 | 3.71 | 1839.07 |
| 1636.2 | 1.1-YR | 51000 | 30.6  | 1832.61 | 2.89 | 1831.51 |
| 1636.2 | 1.5-YR | 66000 | 32.52 | 1834.52 | 3.19 | 1833.38 |
| 1636.2 | 2-YR   | 85000 | 34.59 | 1836.59 | 3.54 | 1835.34 |
| 1636.2 | 2.5-YR | 90000 | 35.08 | 1837.08 | 3.62 | 1835.81 |
| 1632.8 | 1.1-YR | 51000 | 20.71 | 1828.71 | 4.28 | 1827.78 |
| 1632.8 | 1.5-YR | 66000 | 22.32 | 1830.32 | 4.89 | 1829.25 |
| 1632.8 | 2-YR   | 85000 | 24.07 | 1832.07 | 5.57 | 1830.9  |
| 1632.8 | 2.5-YR | 90000 | 24.49 | 1832.49 | 5.73 | 1831.3  |
| 1626   | 1.1-YR | 51000 | 17.82 | 1821.83 | 2    | 1821.08 |
| 1626   | 1.5-YR | 66000 | 19.26 | 1823.26 | 2.19 | 1822.51 |
| 1626   | 2-YR   | 85000 | 20.62 | 1824.62 | 2.43 | 1823.89 |
| 1626   | 2.5-YR | 90000 | 20.93 | 1824.93 | 2.49 | 1824.21 |
| 1613.6 | 1.1-YR | 51000 | 20.79 | 1813.79 | 2.88 | 1813.01 |
| 1613.6 | 1.5-YR | 66000 | 22.13 | 1815.13 | 3.13 | 1814.44 |
| 1613.6 | 2-YR   | 85000 | 23.44 | 1816.44 | 3.27 | 1815.76 |
| 1613.6 | 2.5-YR | 90000 | 23.79 | 1816.8  | 3.28 | 1816.06 |
| 1605.6 | 1.1-YR | 51000 | 18.38 | 1808.38 | 2.13 | 1807.7  |



| 1605.6 | 1.5-YR | 66000 | 19.58 | 1809.58 | 2.34    | 1808.87 |
|--------|--------|-------|-------|---------|---------|---------|
| 1605.6 | 2-YR   | 85000 | 20.87 | 1810.87 | 2.58    | 1810.14 |
| 1605.6 | 2.5-YR | 90000 | 21.22 | 1811.22 | 2.67    | 1810.43 |
|        |        | T =   |       | T       | T = = . |         |
| 1600.7 | 1.1-YR | 51000 | 20.14 | 1804.14 | 2.31    | 1803.37 |
| 1600.7 | 1.5-YR | 66000 | 21.72 | 1805.72 | 2.38    | 1804.69 |
| 1600.7 | 2-YR   | 85000 | 22.96 | 1806.96 | 2.6     | 1806.24 |
| 1600.7 | 2.5-YR | 90000 | 23.27 | 1807.27 | 2.64    | 1806.52 |
| 1595.2 | 1.1-YR | 51000 | 21.51 | 1799.51 | 2.38    | 1798.53 |
| 1595.2 | 1.5-YR | 66000 | 23.45 | 1801.45 | 2.42    | 1800.16 |
| 1595.2 | 2-YR   | 85000 | 24.88 | 1802.88 | 2.55    | 1802.01 |
| 1595.2 | 2.5-YR | 90000 | 25.22 | 1803.22 | 2.6     | 1802.34 |
|        | 1      | 1     | 1     | T       | T       |         |
| 1584.8 | 1.1-YR | 51000 | 14.82 | 1790.82 | 2.6     | 1790.11 |
| 1584.8 | 1.5-YR | 66000 | 16.29 | 1792.29 | 2.93    | 1791.58 |
| 1584.8 | 2-YR   | 85000 | 17.81 | 1793.81 | 3.29    | 1793.13 |
| 1584.8 | 2.5-YR | 90000 | 18.42 | 1794.42 | 3.3     | 1793.48 |
| 1578.2 | 1.1-YR | 51000 | 20.94 | 1786.94 | 2.57    | 1786.15 |
| 1578.2 | 1.5-YR | 66000 | 22.46 | 1788.47 | 2.64    | 1787.79 |
| 1578.2 | 2-YR   | 85000 | 23.87 | 1789.87 | 2.81    | 1789.32 |
| 1578.2 | 2.5-YR | 90000 | 24.4  | 1790.41 | 2.95    | 1789.65 |
|        |        |       |       |         |         |         |
| 1567.2 | 1.1-YR | 51000 | 26.68 | 1779.68 | 3.75    | 1778.72 |
| 1567.2 | 1.5-YR | 66000 | 28.12 | 1781.12 | 4.17    | 1780.28 |
| 1567.2 | 2-YR   | 85000 | 29.38 | 1782.38 | 4.41    | 1781.63 |
| 1567.2 | 2.5-YR | 90000 | 29.65 | 1782.65 | 4.43    | 1781.92 |
| 1561.5 | 1.1-YR | 51000 | 16.38 | 1774.38 | 2.08    | 1773.65 |
| 1561.5 | 1.5-YR | 66000 | 17.51 | 1775.51 | 2.28    | 1774.84 |
| 1561.5 | 2-YR   | 85000 | 18.66 | 1776.66 | 2.51    | 1775.95 |
| 1561.5 | 2.5-YR | 90000 | 18.94 | 1776.94 | 2.56    | 1776.21 |
|        |        |       |       |         |         |         |

**Hydraulic Modeling** March 23, 2018 Page 6 of 6



#### **Conclusions**

The hydraulic model provides an estimate of the water surface profile and hydraulic conditions for the study reach using data from established cross sections and based on several frequently occurring runoff events. A Mannings n or channel roughness coefficient has been chosen to approximately reflect site conditions within each channel reach. An OHWM analysis requires determining the flood event that leaves a "line below which the action of water is frequent enough either to prevent the growth of vegetation or to restrict its growth to predominantly wetland species." A 2-year flood event (the 98% annual probability) with a Manning's n of 0.03 is recommended for the OHWM analysis. Without more information to calibrate the model, a lower n value is selected that reduces flood levels and moves the estimated flood area riverward.

The OHWM analysis will focus more on aerial photography interpretation, geomorphic interaction of the channel and overbank and land use practices. Where farming practices are successfully employed yet fall below the anticipated 2- year flood elevation, such areas are withdrawn from consideration as below the OHWM.



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